PowerBass™ Series

PB12

Powered Subwoofer

Service Manual

JBL Consumer Products
250 Crossways Park Dr.
Woodbury, New York 11797

Rev10 2/2004

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PB12 – DIFFERENCES IN REVISION 1 AND REVISION 2

REVISION 1	REVISION 2
Amplifier faceplate says “Made in Canada” Amplifier serial number starts with “AM” Black (or silver) potted, non-serviceable output module	Amplifier serial number starts with “HA” Output transistors in the open, on a large black heatsink Large plastic cup enclosing the rear of the amp assembly Main PCB, bottom, solder-side contains all SMD devices “Made in Mexico” label on outer part of cabinet

BOTH VERSIONS OF THESE AMPLIFIERS ARE NOT CONSIDERED INTERCHANGEABLE; THEY ARE NOT A DROP-IN REPLACEMENT IN THE CABINET OF THE OTHER VERSION.

SAFETY INFORMATION

Warning

Any person performing service of this unit will be exposed to hazardous voltages and the risk of electric shock. It is assumed that any person who removes the amplifier from this cabinet has been properly trained in protecting against avoidable injury and shock. Therefore, any service procedures are to be performed by qualified service personal ONLY!

Caution

Before the amplifier is plugged in, be sure its rated voltage corresponds to the voltage of the AC power source to be used. Incorrect voltage could cause damage to the amplifier when the AC power cord is plugged in. Do not exceed rated voltage by more than 10%: operation below 90% of rated voltage will cause poor performance or may shut the unit off.

Leakage/Resistance Check

Before returning the unit to the customer, perform a leakage or resistance test as follows:

Leakage Current. Connect the unit to its rated power source. Using an ammeter, measure the current between the neutral side of the AC supply and chassis ground of the unit under test. If leakage current exceeds 0.5mA, the unit is defective. Reverse the polarity of the AC supply and repeat.

Resistance. Measure the resistance from either side of the line cord to chassis ground, If it is less than 500k ohms, the unit is defective.

WARNING! DO NOT return the unit to the customer if it fails one of these tests until the problem is located and corrected.

Critical Components

All components identified with the IEC symbol in the parts list and schematic diagram designate components in which safety can be of special significance when replacing a component identified with. Use only the replacement parts designated in the parts list or parts with the same rating of resistance, wattage or voltage.

List of Safety Components Requiring Exact Replacements

Revision 1	Revision 2	Description
F1 - 80117	093-105202-300	Line Fuse Slo Blo 2.0A
PWRCORD 80105	083-041802-009	250V UL approved SPT-2 or better with polarized plug, UL approved wired with the hot side to fused side. Use with factory replacement panel strain relief (70305) only.
TRX 80116	042-010053-003	Power Transformer. Use only factory replacement.
BR RECT 50100	BR1 052-400080-000	Bridge diode. Use only factory replacement.
C1,2 (2200uF 100V) 30710	C6,8 (3300uf 80v) 034-470745-200	Large electrolytic filter caps. Be sure replacement part is at least the same working voltage and capacitance rating. Also the lead spacing is important. Incorrect spacing may cause premature failure due to internal cabinet pressure and vibration.
C10 30718	Does not apply	4.7uF, 100 volt NPE low df radial. (On Power amp PCB)
S64AMI 60302	Does not apply	Power output module. Use only factory replacement
Faceplate 70325	n/a	Use only factory replacement
Rear Amp Cover Does not apply	063-531808-000	Use only factory replacement
Inductor 80100	Does not apply	CMC - Use only factory replacement
Inductor 80121	Does not apply	L1 - Use only factory replacement
Does not apply	Inductor 043-300101-000	L2 - Use only factory replacement
Does not apply	Inductor 043-700101-000	L3 - Use only factory replacement

BASIC SPECIFICATIONS PB12 Subwoofer

Output Power	250 watts RMS
Driver	12" Woofer
Frequency Response	25Hz – Low-Pass Frequency setting
Inputs	Line Level (option: LFE); Speaker Level
Outputs	Speaker level fixed frequency 150Hz
Low-Pass Frequency	Variable from 50Hz – 150Hz
High-Pass Frequency	150Hz when using Speaker Level Output
Dimensions (H x W x D)	15 1/2" x 15" x 16" 394mm x 381mm x 406mm (with feet) 17 1/2" x 15" x 16" 445mm x 381mm x 406mm
Weight	40 lb/18.2kg

00261-1

Refinements may be made on occasion to existing products without notice but will always meet or exceed original specifications unless otherwise stated.
PowerBass is a registered trademark of JBL, Incorporated.

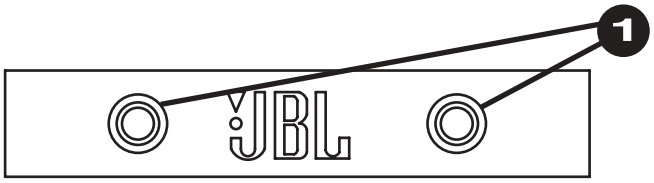
DETAILED SPECIFICATIONS PB12 Subwoofer

JBL PB12 250W Powered Sub Amp					
LINE VOLTAGE	**Yes/No**	**Hi/Lo Line**	**Nom.**	**Unit**	**Notes**
US 120vac/60Hz	Yes	108-132	120	Vrms	Normal Operation
EU 230vac/50-60Hz	Yes	207-264	230	Vrms	Normal operation, MOMS required
Parameter	**Specification**	**Unit**	**QA Test Limits**	**Conditions**	**Notes**
Amp Section					
Type (Class AB, D, other)	D	n/a	n/a		
Load Impedance (speaker)	5.6	Ohms	n/a	Nominal	
Rated Output Power (120VAC)	250	Watts	140		Domestic version only 120 VAC-60 Hz
Rated Output Power (230VAC)	250	Watts	130		EU Version only 230 VAC-50 Hz
THD @ Rated Power	0.3	%	1	22k filter	145 Watts
THD @ 1 Watt	0.1	%	0.5	22k filter	
DC Offset	10	mV-DC	20	@ Speaker Outputs	
Damping factor	>50	DF	35	Measured at amplifier board	At spkr cable. 150 Watts @ THD < 0.1 % @ 50 Hz
Input Sensitivity					
Input Frequency	50	Hz	50	Nominal Freq.	
L&R	240	mVrms	±2dB	To 150 Watts	Single input driven
LFE input	240	mVrms	±2dB	To 150 Watts	Single input driven, LFE switch ON
Speaker/Hi Level Input	2.4	Vrms	±2dB	To 150 Watts	Single input driven
Signal to Noise					
SNR-A-Weighted	90	dBA	70	relative to rated power	A-Weighting filter
SNR-unweighted	85	dBr	70	relative to rated power	22k filter
SNR rel. 1W-unweighted	65	dBr	60	relative to 1W Output	22k filter
Residual Noise Floor	1	mVrms	3	Volume @max, using RMS reading DMM/VOM (or A/P) BW=20 Khz.	Line level inputs must be terminated using 1KOHM
Residual Noise Floor	1.5	mVrms(max)	3	Volume @max, w/ A/P Swept Bandpass Measurement (Line freq.+ harmonics) (BW=20 Khz)	Line level inputs must be terminated using 1KOHM
Input Impedance					
Line Input (L, R,LFE)	20K	ohms	n/a	Nominal	
Speaker/Hi Level Input	4.7K	ohms	n/a	Nominal	
Filters					
LP filter 4th order fixed	60-180	Hz	± 10		2nd order variable + 2nd order fix-24 db/Octave
Subsonic filter (HPF) 3rd Order	Fixed				
LFE Low pass 2nd order	200>LP<1K	Hz		LFE input driven only	
HP speaker out connector	200	Hz	± 10	Speaker input driven - 4 Ohms	
	100	Hz	± 10	Speaker input driven - 8 Ohms	
Features	--				
Volume pot Taper (lin/log)	LOG	--	functional		A Taper
HP Speaker out	YES		functional		Refer to Filter section
Phase switch	0-180	deg	functional		
LP Filter defeat switch	YES		functional		Disables LP filter, intended for LFE
Input Configuration					
Line In (L,R) & LFE	YES	--	functional		Dual RCA jack
Spkr/Hi Level In	YES	--	functional		Binding post connector L&R
Signal Sensing (ATO)					
Auto-Turn-On (yes/no)	YES		functional		
ATO Input test frequency	50	Hz	functional	"	
ATO Level LFE Input	4	mV	functional	"	Maximum acceptable level.
ATO Level Speaker in	50	mV	functional	"	Maximum acceptable level.
ATO Turn-on time	5	ms	functional	Amp connected and AC on, then input signal applied	
Auto Mute/ Turn-OFF Time	15	minutes	15	T before muting, after signal is removed	Auto turn of time (T) must be 5 > T < 15 Minutes
Power on Delay time	3	sec.	4	AC Power Applied	
Transients/Pops					
ATO Transient	5	mV-peak	n/a	@ Speaker Outputs	
Turn-on Transient	50	mV-peak	2v-pp	@ Speaker Outputs	AC Line cycled from OFF to ON
Turn-off Transient	50	mV-peak	2v-pp	@ Speaker Outputs	AC Line cycled from ON to OFF
Efficiency	65	%	64		Nominal Line voltage 120 VAC
Stand-by Input Power	24	Watts	26	@ nom. line voltage	Maximum allowable input power under nominal Input voltage and frequency, HOT or COLD operation.
Power Cons. @ rated power	234	Watts	240	@ nom. line voltage	150 Watts @ 5.6 Ohms nominal line voltage
Protection					
Short Circuit Protection	YES		functional	Direct short at output	Amplifier should resume operation after short circuit condition removal
Thermal Protection	YES		functional	@1/8 max unclipped Power at 1.06 times the input voltage	
DC Offset Protection	YES		-	DC present at Speaker Out leads	
Line Fuse Rating					
USA-Domestic	2	Amps		Type-T or Slo Blo-250 V	
EU	1.25	Amps		Type-T or Slo Blo-250 V	External fuse with UL/SEMKO rated holder

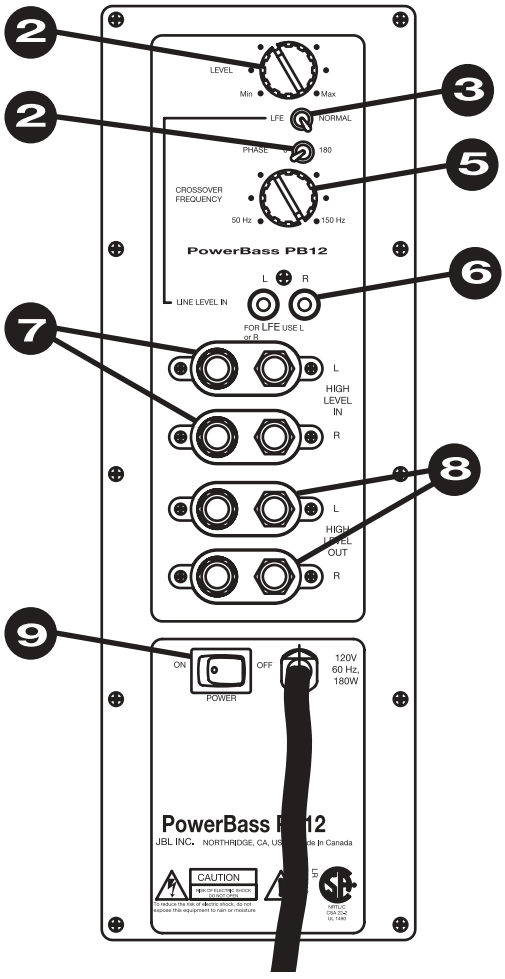
PB12 Subwoofer Controls and Their Function

1. **Power -** These lights will be red when the unit is plugged in and not receiving a signal; when the PB12 receives a signal, the lights will cycle to GREEN. If no signal is received after 10-15 minutes the lights will cycle back to RED (standby) until a signal is present again.
2. **Level Control -** The subwoofer Level Control, PB12, (located on the rear panel) adjusts the volume of the subwoofer relative to the rest of the system.
3. **LFE/Normal Switch -** Ordinarily placed in the Normal position - but switch to LFE when playing Dolby® Digital, DTS® or other digital surround modes - see page 9.
4. **Phase Switch -** Changes the subwoofer's output to be in phase or 180 degrees out of phase with the program material.
5. **Crossover Frequency -** Sets the highest frequency the subwoofer will reproduce.
6. **Line Input -** Main Input connection to subwoofer (preferred).
7. **Speaker In Jacks -** Main Input connection to subwoofer when line level, subwoofer, or pre-amp output connectors are not available, or when a high pass filter (set at 150Hz) to main loudspeakers is desired through the Speaker Output Jacks.
8. **Speaker Out Jacks -** Connected to main loudspeakers when the Speaker Input Jacks are used.
9. **Power Switch -** Turns the PB12 on or off.

Front Panel



Rear Panel



Speaker Connection

When we designed the PB12 powered subwoofers, our goal was to offer the user the best possible performance combined with the most flexible and complete installation options. Please look over the following three examples to determine which description best matches your system and follow the corresponding hookup instructions.

To use the binding-post speaker terminals with bare wire, unscrew the collar until the hole through the center-post is visible under the collar.

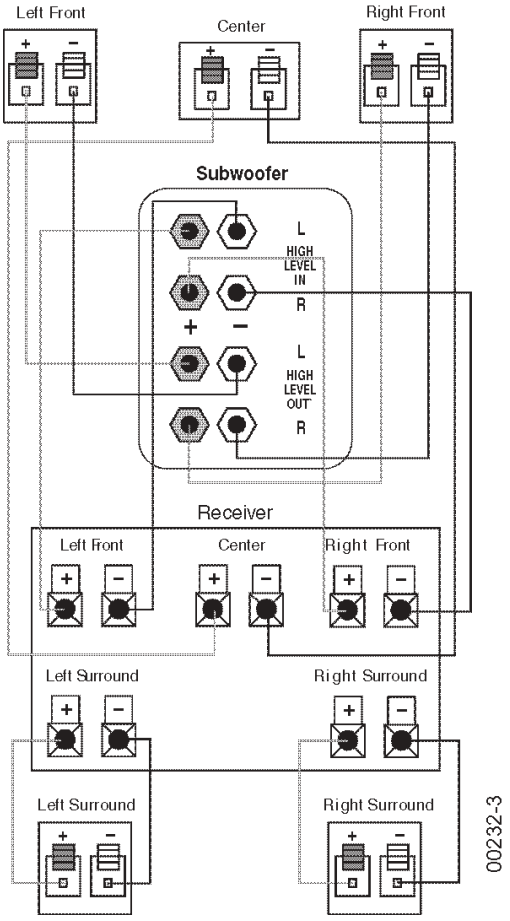
Insert the bare end of the wire through the hole in the post, then screw the collar back down until the connection is tight. The holes in the center of the collars are intended for banana-type connectors.

Dolby Pro Logic (Non-Digital) – Speaker Level

Use this installation method for Dolby Pro Logic applications (not Dolby Digital, DTS or other digital processing), where the receiver/processor does not have a subwoofer output or a volume-controlled preamp (line-) level output:

Connect your receiver or amplifier's front left and right speaker terminals to the left and right terminals on the subwoofer that are marked "High Level In." Connect the left and right terminals on the subwoofer that are marked "High Level Out" to the corresponding terminals on the back of your front left and right speakers.

Connect your receiver or amplifier's center, left and right surround-speaker terminals to the corresponding terminals on the back of your center, left and right surround speakers.



Dolby Pro Logic (Non-Digital) – Line Level

Use this installation method for Dolby Pro Logic applications (not Dolby Digital, DTS or other digital processing), where the receiver/processor is equipped with a subwoofer output or a volume-controlled preamp (line-) level output:

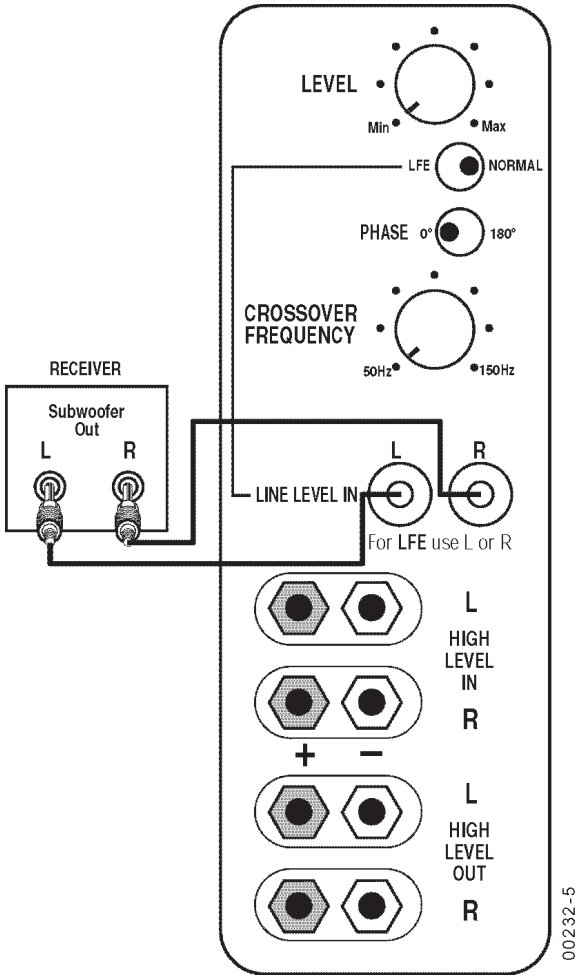
Use RCA-type patch cords to connect the line-level subwoofer outputs on your receiver or amplifier to the line-level inputs on the subwoofer. IMPORTANT: Make sure that the LFE toggle switch on the subwoofer is in the “Normal” position. Do not use the “LFE” position with Dolby Pro Logic-only processors.

Note: If your receiver or amplifier only has one subwoofer output jack, then you may connect the subwoofer output on your receiver/preamplifier to either the left or right line-level input on the subwoofer. It makes no difference which jack you choose.

Connect each speaker to the corresponding speaker terminals on your receiver or amplifier.

Make sure your receiver or processor is configured correctly: Make sure that the subwoofer is configured as “On.”

Note for advanced users: If your receiver/processor has a built-in low-pass crossover filter for the subwoofer output, then the LFE switch should be set to the “LFE” position to bypass the subwoofer’s internal crossover.



Dolby Digital or DTS (or Other Digital Surround Mode) Connection

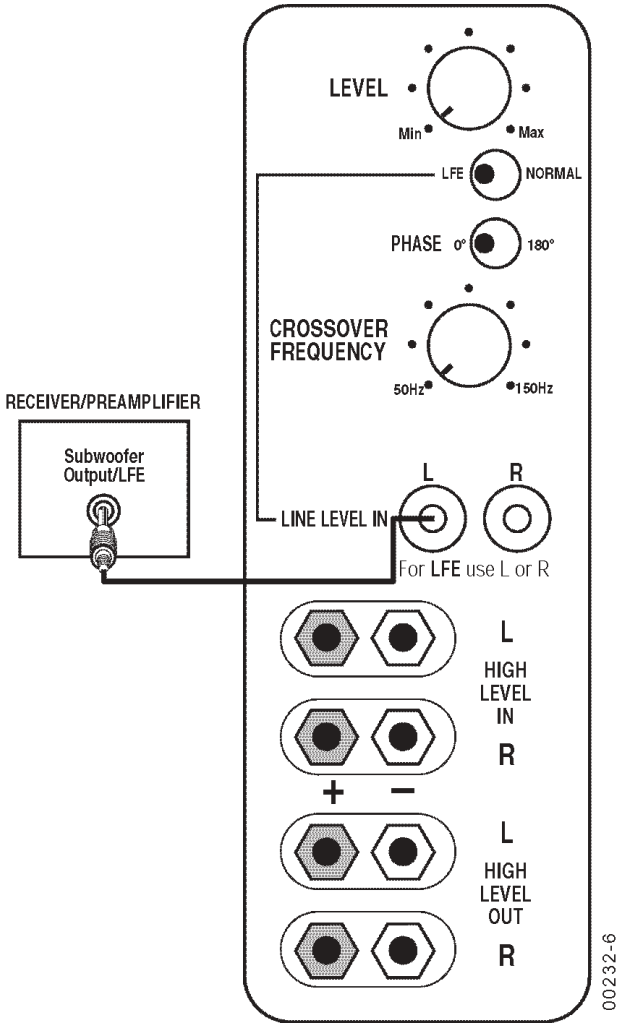
Use this installation method for Dolby Digital, DTS or other digital surround processors:

IMPORTANT: Make sure that the LFE toggle switch on the subwoofer is in the “LFE” position. Use the line-level input jacks for the Low-Frequency Effects channel. Connect these jacks to the LFE output or subwoofer output on your receiver or amplifier.

Note: If your receiver or amplifier only has one subwoofer output jack, then you may connect the subwoofer output on your receiver/preamplifier to either the left or right line-level input on the subwoofer. It makes no difference which jack you choose.

Connect each speaker to the corresponding speaker terminals on your receiver or amplifier.

Make sure that you have configured your surround-sound processor for “Subwoofer On” or “LFE On.” The front left, front right, center and rear speakers should be set to “Small” or “Large” depending on their size and frequency response. Consult your receiver’s or processor’s owner’s manual.



OPERATION

Power

When the unit is plugged in and the power switch is on and no signal is received, the LEDs on the front of the unit will turn red. When a signal is present, the LEDs will turn green.

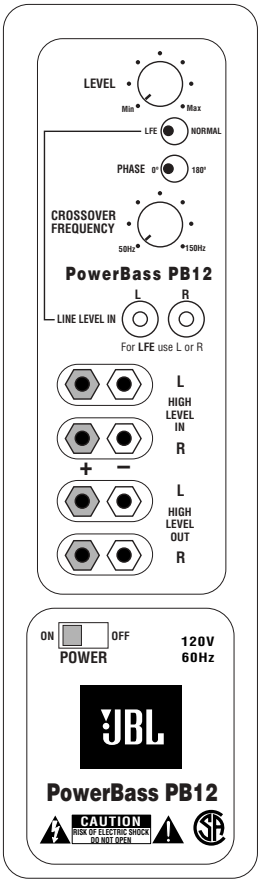
Note: It will take several minutes for the LEDs to turn from green to red after the input signal to the subwoofer is removed. Due to JBL's unique, high-output, high-efficiency amplifier design, power consumption is minimal when the subwoofer is not receiving a signal.

Level Control

The subwoofer Level Control adjusts the volume of the subwoofer relative to the rest of the system. Proper level adjustments depend on several variables such as room size, subwoofer placement, type of main speakers and listener position. Adjust the subwoofer level so that the volume of the bass information is pleasing to you.

Crossover Adjustments

The Crossover Frequency Control determines the highest frequency at which the subwoofer reproduces sounds. If your main speakers can comfortably reproduce some low-frequency sounds, set this control to a lower frequency setting, between 50Hz – 100Hz. This will concentrate the subwoofer's efforts on the ultradeep bass sounds required by today's films and music. If you are using smaller bookshelf speakers that do not extend to the lower bass frequencies, set the low-pass crossover control to a higher setting, between 120Hz – 150Hz. This control is not used when the LFE switch is in the "LFE" position.



Phase Control

The Phase Control determines whether the subwoofer's piston-like action moves in and out in phase with the main speakers or opposite the main speakers. There is no correct or incorrect setting. Proper phase adjustment depends on several variables such as subwoofer placement and listener position. Adjust the phase switch to maximize bass output at the listening position.

Remember, every system, room and listener is different. There are no right or wrong settings; this switch offers the added flexibility to adjust your subwoofer for optimum performance for your specific listening conditions without having to move your speakers.

If at some time in the future you happen to rearrange your listening room and move your speakers, you should experiment with the phase switch in both positions, and leave it in the position that maximizes bass performance.

TROUBLESHOOTING

If you used the high-level (speaker) inputs and there is no sound from any of the speakers:

- Check that receiver/amplifier is on and a source is playing.
- Check that powered subwoofer is plugged into an active electrical outlet and is switched on.
- Check all wires and connections between receiver/amplifier and speakers. Make sure all wires are connected. Make sure none of the speaker wires are frayed, cut or punctured.
- Review proper operation of your receiver/amplifier.

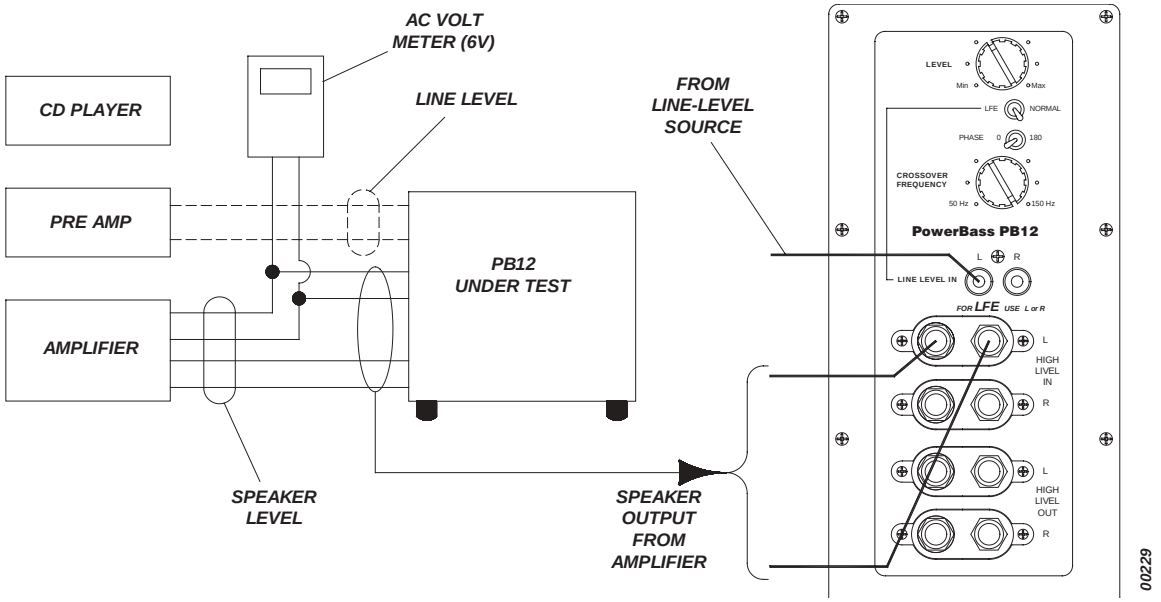
If there is low (or no) bass output:

- Make sure the connections to the left and right "Speaker Inputs" have the correct polarity (+ and –).
- Make sure that the subwoofer is plugged into an active electrical outlet and switched on.
- Adjust the crossover point.
- Flip the Phase Control switch to the opposite position.
- If you are using a Dolby Digital/DTS receiver or processor, make sure that the subwoofer adjustments on the receiver/processor are set up correctly.
- Slowly turn the Level Control clockwise until you begin to hear the desired amount of bass.

If you used the line-level inputs and there is no sound from the subwoofer:

- Check that receiver/amplifier is on and a source is playing.
- Check that powered subwoofer is plugged into an active electrical outlet and is switched on.
- Check all wires and connections between receiver/ amplifier and subwoofer. Make sure all wires are connected. Make sure none of the wires are frayed, cut or punctured.
- Review proper operation of your receiver/amplifier.
- Slowly turn the Level Control clockwise until you begin to hear the desired amount of bass.
- Make sure that you have configured your receiver/ processor so that the subwoofer/LFE output is on.

PB12 TEST SETUP AND PROCEDURE



General Function

UUT = Unit Under Test

1. Connect one line level input cable (RCA) from signal generator to either Right or Left Level input on UUT. VOLUME control should be full conterclockwise. Make sure the LFE/Normal switch is in the NORMAL position.
2. Turn on generator, adjust to **100mV, 50Hz.**
3. Plug in UUT; Turn Main Power switch ON. LED's on the front panel may be either Red or Green. Turn VOLUME control full clockwise. Low Pass control should be set fully clockwise (150Hz).
4. LED should turn Green; immediately bass response should be heard and felt from port tube opening.
5. Turn off generator, turn VOLUME control fully counterclockwise, disconnect RCA cables.
6. Connect one pair of speaker cables to either high level input terminal on UUT. Cables should be connected to an integrated amplifier fed by the signal generator.
7. Turn on generator and adjust so that speaker level output is **1.0V, 50Hz.** Turn VOLUME control full clockwise.
8. Green LED should light, immediate bass response should be heard and felt from the port tube opening.

Sweep Function

1. Follow steps 1-4 above, using a sweep generator as a signal source.
2. Sweep generator from 20Hz to 300Hz. Listen to the cabinet and drivers for any rattles, clicks, buzzes or any other noises. If any unusual noises are heard, remove driver and test.

Driver Function

1. Remove driver from cabinet; detach + and – wire clips.
2. Check DC resistance of driver; it should be **4.8 ohms.**
3. Connect a pair of speaker cables to driver terminals. Cables should be connected to an integrated amplifier fed by a signal generator and adjust so that speaker level output is **5.0V.**
4. Sweep generator from 20Hz to 1kHz. Listen to driver for any rubbing, buzzing, or other unusual noises.

Service Bulletin

Service Bulletin JBL2001-03 Rev1 – January 2002 — This is considered a Minor repair

To: All JBL Service Centers

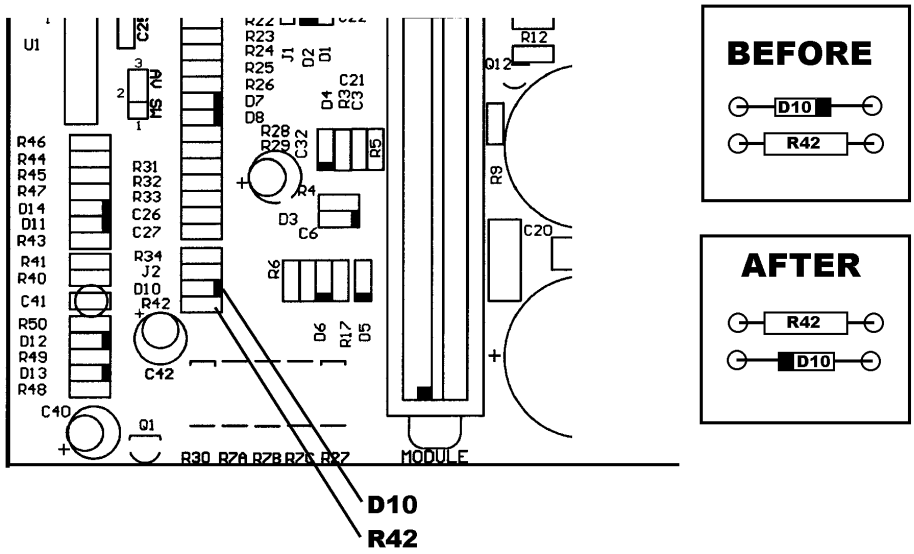
Models: PB10, PB12 (Revision 1 only)*

Subject: Unit Will Not Switch to Standby Mode

When the power cord of the PB series subwoofer is plugged into a wall outlet (and for the PB12 only, the power switch is on), and an audio signal is present, the LED's on the cabinet face will turn green, indicating the subwoofer is in the ON mode. With the audio signal removed, it will take 10 - 15 minutes for the LEDs to turn from green to red, indicating the subwoofer is now in the STANDBY mode. Power consumption is minimal in this mode.

In the event you receive a PB10 or PB12 subwoofer with the complaint: "The unit will not switch to standby mode, even when the audio signal is removed" (indicated by the subwoofer's green LED's remaining on), perform the following modification:

1) Set the unit on a padded surface and remove all external cables.
2) On the amplifier faceplate, remove the (10) Phillips mounting screws around the perimeter.
3) Remove the amplifier assembly from the enclosure. If the amp is turned and supported correctly, no other connectors need to be unplugged.
4) Locate Zener Diode D10 and Resistor R42 (22kΩ). See illustration. These parts must be "swapped", i.e., R42 soldered into the D10 location, and D10 soldered into the R42 location. VERY IMPORTANT: Observe polarity on D10 in new location.
5) Replace amplifier; test subwoofer to assure the unit goes into the standby mode 10 - 15 minutes after removing the Audio input signal.



Model	Serial number	Status	Action
PB10 * PB12 *	All serial numbers affected	Unit may not switch to Standby mode	Swap locations: Zener Diode D10, Resistor R42 (22kΩ). Observe D10 polarity.

*** Revision 1 of the PB10/12**: Amplifier faceplate says "Made in Canada"; Amplifier serial number starts with "AM"
Black (or silver) potted, non-serviceable S53/64AMI output module. PB10 only – No Power switch

Service Bulletin

Service Bulletin JBL2001-04 Rev2 – February 2003 | This is considered a Minor repair

To: All JBL Service Centers

Models: PB10, PB12 (Revision 1 only)*

Subject: Hum, Buzz or "Thumping"

In the event you receive a PB10 or PB12 subwoofer complaint: "There is an audible hum or buzz", or the subwoofer "thumps" or "pops" every 10 seconds, then review the conditions below to determine the most effective solution:

A) *Audible Hum with unit on, Green LED is ON, hum disappears completely when the connecting input cables (RCA or Speaker-Level) are disconnected:*

Very long runs of line-level input cables, particularly in parallel with AC power cords, may induce hum in the audio cables. Check audio cables for defects, broken ground connections, or replace low quality cables. Try plugging the AC power cord from the subwoofer into a different AC service outlet other than the outlet the rest of the audio equipment is plugged into.

B) Mild Audible Hum under all circumstances when power cord is plugged in outlet. Hum level does not change whether the LED's are Red or Green, or input cables are connected or disconnected. Level control adjustments do not change the hum level.

This may be a mechanical hum caused by the power transformer. Note that a slight hum, within design limits, may be noticeable in a very quiet room, when you are close to the unit. This is acceptable within the PB10/12's product and price category to most customers, but not to others. If the mechanical hum is unacceptable to the customer, then replace Power Transformer. PB10: JBL part# 80135. PB12: JBL part# 80116

C) *Loud Hum, under all circumstances. It may be louder when LED's are Green vs. Red ; it may be affected by the position of the Level control. The subwoofer may "thump" or "pop" approximately every 10 seconds.*

Reset the digital subwoofer amplifier by unplugging the AC power cord. Wait 30 seconds, then plug the cord back in. Repeat this 2-3 times if necessary.

For #B only - If the unit still does not function correctly, then check and replace main Power Supply capacitors C1 and C2.

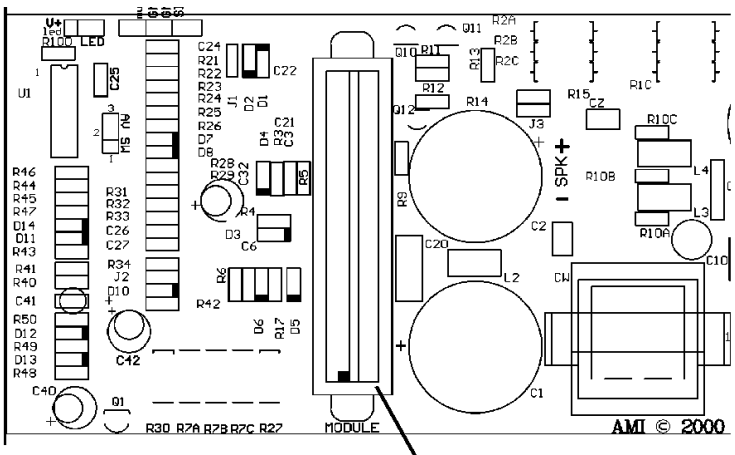
Both Value and df should be checked, with a GenRad model 1657 Digibridge or equivalent
Value should be the rating listed below, within this tolerance: +80/-20 %
A df value of higher than 15% (.15) should be considered defective.

PB10	4700 μF 50v 105c	JBL part# 30706
PB12	2200 μF 100v 105c	JBL part# 30710

For #C only - If the unit still does not function correctly, then replace Power Amp Module S53/64AMI as per instructions below: PB10: JBL part# 60301 PB12: JBL part# 60302

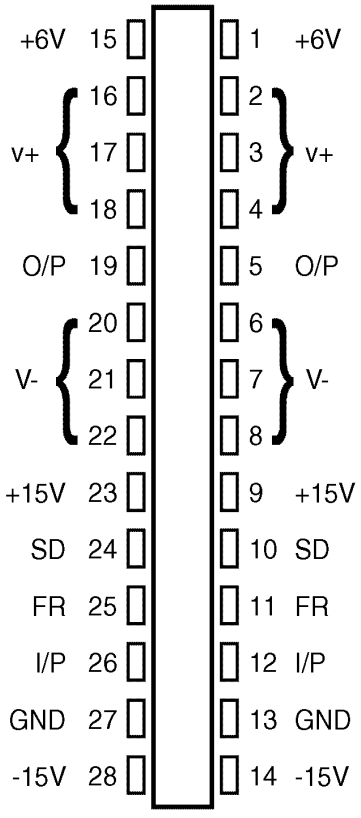
1) Set the unit on a padded surface and remove all external cables.
2) On the amplifier faceplate, remove the (10) Phillips mounting screws around the perimeter.
3) Remove the amplifier assembly from the enclosure. If the amp is supported correctly, no other connectors need to be unplugged.
4) Locate the Power Amp Module S53/64AMI, see location on the following page. It is the large black or gray component with a metal case. On the solder side of the circuit board are 28 soldered connections. NOTE: See special handling instructions for S53/64AMI on the following page.
5) Replace the amplifier assembly back into the cabinet; replace the screws.
6) Test the unit and confirm the original problem has been corrected. **NOTE: THE PB10/12 REVISION 1 AMPLIFIER MUST ALWAYS BE TESTED WITH A WOOFER OR 4 OHM RESISTIVE LOAD**.

PB10/12 Revision 1 Only



S53/64AMI POWER AMP MODULE

S53AMI/S64AMI - Power Amp module SAFETY PART



NOTE: THE FOLLOWING PROCEDURES MUST BE FOLLOWED WHEN INSTALLING NEW S53AMI/S64AMI AMP MODULES: FAILURE TO FOLLOW ONE OR MORE OF THESE STEPS MAY RESULT IN THE INSTANT DESTRUCTION OF THE MODULE WHEN POWERED UP.

1) Align white indent marker on Amp Module with indent marker on main PCB; alternately observe position of label on the top of the module; incorrectly replacing the Module 180° in the PCB slot will result in its destruction.
2) All AC powered test instruments (meters, oscilloscopes, etc.) must have a floating ground, i.e. be connected to an isolation transformer.
3) Align and position the Amp Module before soldering.
4) Attach the amp Module with the mounting screws before soldering or powering up.
5) Use only rosin-core or non-acid core solder; thoroughly de-flux the surfaces after soldering.

If the new S53AMI/S64AMI Amp Module has larger mounting hole(s) in the case, and the stock screws no longer will fit, and screws of the proper type cannot be obtained locally order:

(2) part# 60301S (screws)

(2) part# 60301N (nuts)

MODEL	Serial Number (120v) Serial numbers are located on the cabinet directly below the amplifier faceplate.	STATUS	ACTION
PB10	See serial numbers on Page 3 for factory modified units	Hum, Buzz or "Thumping"	Replace Power Amp Module S53AMI for symptoms described in #C only
PB12		Hum, Buzz or "Thumping"	Replace Power Amp Module S64AMI for symptoms described in #C only

*** Revision 1 of the PB10/12**: Amplifier faceplate says "Made in Canada"; Amplifier serial number starts with "AM"
Black (or silver) potted, non-serviceable S53/64AMI output module. PB10 only – No Power switch

FACTORY MODIFIED PB-10 SERIAL NUMBERS

1953
7720
8579
10145
10448
10458
11772
11792
11939
13128
13296
14371
14508
14510
14519
14674
14822
15092
15525
15634
15644-15645
15649
15654
15657
15659
15662
15673-15674
15676-15677
15679
15681
15683
15692
15696
15702
15705
16413
17723
17740
18274
19665
20470
21026
21124
21126
21637
22892
22894-22895
22901
22905-22906
22908
22913
22917
22927
22933
25158-25159
25161
25164
25168
25171
25174
25179
25185
25187
25189
25194
25214
25218-25219
25229
25234-25236
25238-25243
25247-25249
25251-25252
25256-25257
25261-25263
25265-25267
23000
23896
23904-23905
23989
23991
23993
23997
24004
24010
24166
24230
24874-24875
24888
24902
24905-24907
24909
24913-24914
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24928-24929
24931-24932
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25029-25030
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25154-25156
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26405-26406
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26922-26935
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26762-26768
26770-26771
26773-26778
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27624-27647
27649-27698
27701-27720
27722-27769
27771-27774
27776-27852
27854-27866
27868-27911
27913-27999
28001-28067
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30932-31025
31027-31072
31074-31123
31125
31127-31139
31256
31771
35089
35733
36186
37400
39339
80749

Service Bulletin

Service Bulletin JBL2001-05 Rev2 - February 2002 — This is considered a Minor repair

To: All JBL Service Centers

Models: PB12 (Revision 1 only)*

Subject: Popping Every Few Seconds During Play

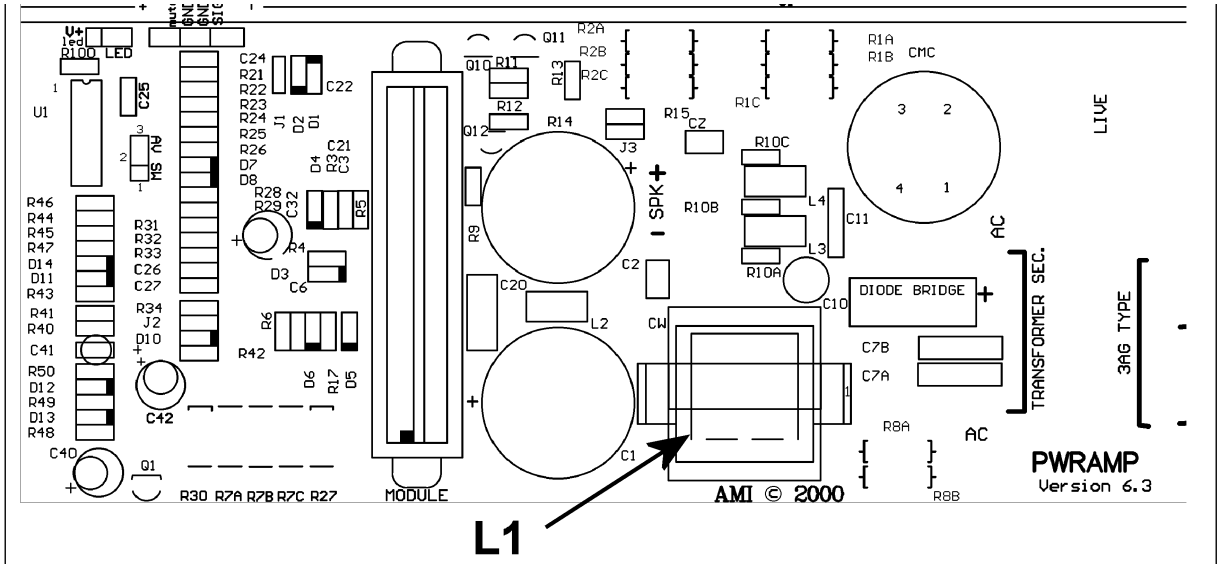
In the event you receive a PB12 subwoofer with the complaint: "The subwoofer "thumps" or "pops" every few seconds of play", follow the procedure below:

Probable Cause:

Inductor L1 (220uH) may be damaged.

Check and Replace L1 if necessary:

1) Set the unit on a padded surface and remove all external cables.
2) On the amplifier faceplate, remove the (10) Phillips mounting screws around the perimeter.
3) Remove the amplifier assembly from the enclosure. If the amp is supported correctly, no other connectors need to be unplugged.
4) Locate Inductor L1 on the main PCB. If the windings appear charred or burnt, it must be replaced.
5) Order JBL part# 80121 and replace L1.
6) Replace the amplifier assembly back into the cabinet; replace the screws.
7) Test the unit and confirm the original problem has been corrected.



Model	Serial number (120V)	Status	Action
PB12 *	AM0035-24318 and below	L1 may be damaged if experiencing above symptoms	Replace L1 with JBL part# 80121
PB12 *	AM0035-24319 and above	Modified by factory	None required

*** Revision 1 of the PB12**: Amplifier faceplate says "Made in Canada"; Amplifier serial number starts with "AM" Black (or silver) potted, non-serviceable S64AMI output module.

Service Bulletin

Service Bulletin JBL2001-07 Rev1 - February 2002 | This is considered a Minor repair

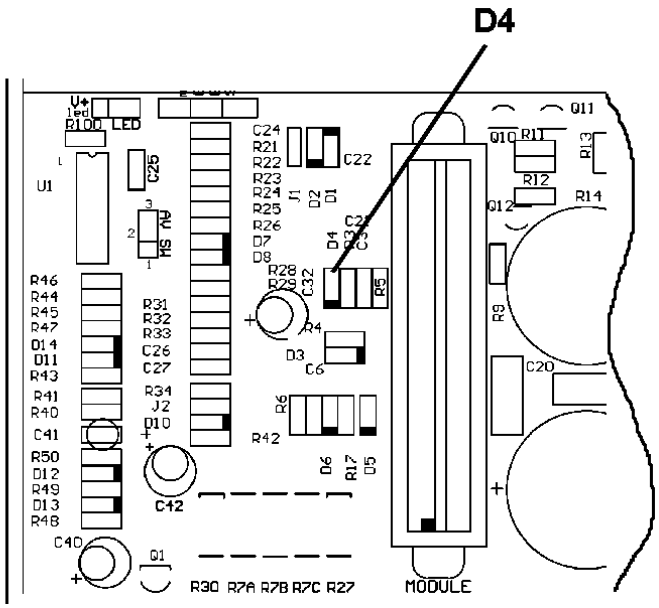
To: All JBL Service Centers

Model: PB12 (Revision 1 only)*

Subject: Possible Missing Diode D4

In the event you receive a PB12 subwoofer for any servicing reason, check for the presence of diode D4 on the Main PCB close to the Power Amp Module (see illustration). If D4 is missing or has been "cut out" of the circuit, it should be replaced; add JBL part# 50115. Observe polarity.

Note: The presence or absence of D4, in itself, does not contribute to, or solve, an amplifer failure. Purpose of D4 is to reduce the possibility of an occasional Turn-OFF pop noise.



Reference for general location only; all parts or designators may not conform exactly to this drawing.

*** Revision 1 of the PB12**:

Amplifier faceplate says "Made in Canada"; Amplifier serial number starts with "AM"
Black (or silver) potted, non-serviceable S64AMI output module.

Service Bulletin

Service Bulletin JBL2003-08 – July 2003 — This is considered a Minor repair

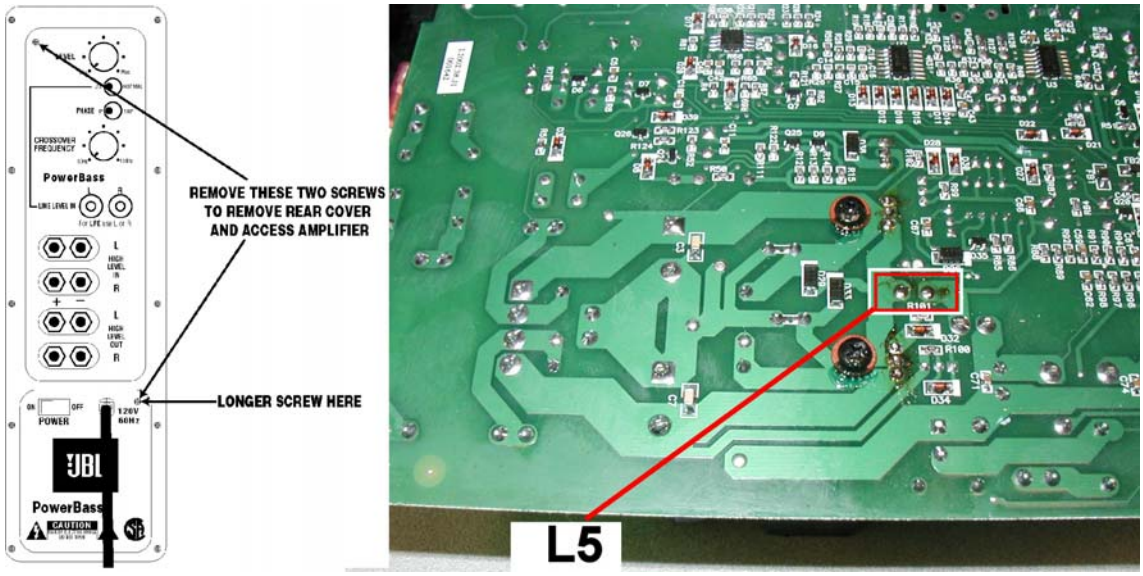
To: All JBL Service Centers

Models: PB12 (Revision 2, PCB Revision “C” or “D” only) *

Subject: Service Modification – L5 Bypass

In the event you receive a PB12 subwoofer for servicing, the following modification should be performed to the amplifier, after identification that it is Revision 2, and with PCB Revision “C” or “D”:

1) Set the unit on a padded surface and remove all external cables.
2) On the amplifier faceplate, remove the (10) Phillips mounting screws around the perimeter.
3) Remove the amplifier assembly from the enclosure. If the amp is supported correctly, no other connectors need to be unplugged.
4) Remove the plastic rear cover to access the components.
5) Locate L5 Ferrite Bead; on the opposite side of the PCB (SMD component side), solder a 16-18 gauge jumper or buss wire across its two connections.
6) Complete any other repairs; reassemble and test the unit.



NOTE: *Some* woofers that were used in the PB12 had similar terminals (both .205") so there is no polarity-keying if the woofer wires are unplugged for any reason, (even though the amp output terminals themselves are dissimilar (.205 and .250). In this case, assure the polarity is correct if the woofer wires have been unplugged.
Green = Positive (.250”), Black = Negative (.205”). The “+” and “-“ markings are on the woofer terminal block. Assure the Faston connectors are tight and crimped on the terminals.

MODEL	* Identification of the PB12 Revision 2: (120v)	STATUS	ACTION
PB12	1) Amplifier serial number starts with “HA” Output transistors in the open, on a large black heatsink Large plastic cup enclosing the rear of the amp assembly Main PCB, bottom, solder-side contains all SMD devices “Made in Mexico” label on outer part of cabinet 2) PCB Revision “C” and “D” – Revision silkscreen can be found on the long outer edge of the PCB	All PB12 amplifiers Revision 2 and PCB Revision “C” and “D” should be modified during any service procedure to avoid Q18,Q22 damage	Solder a jumper or buss wire across L5 to bypass it.

TECH TIPS

Troubleshooting tips and solutions to common service problems

For models: PB10, PB12 (Revision 2) * **TIP# JBLTT2003-04**

Subject: Replacing MOSFETS Q18, Q22

In the event you need to replace MOSFET transistors Q18 or Q22 as part of a repair, it is important to use ONLY the JBL part# FE106401110 *or* only the brands: International Rectifier, or Fairchild.

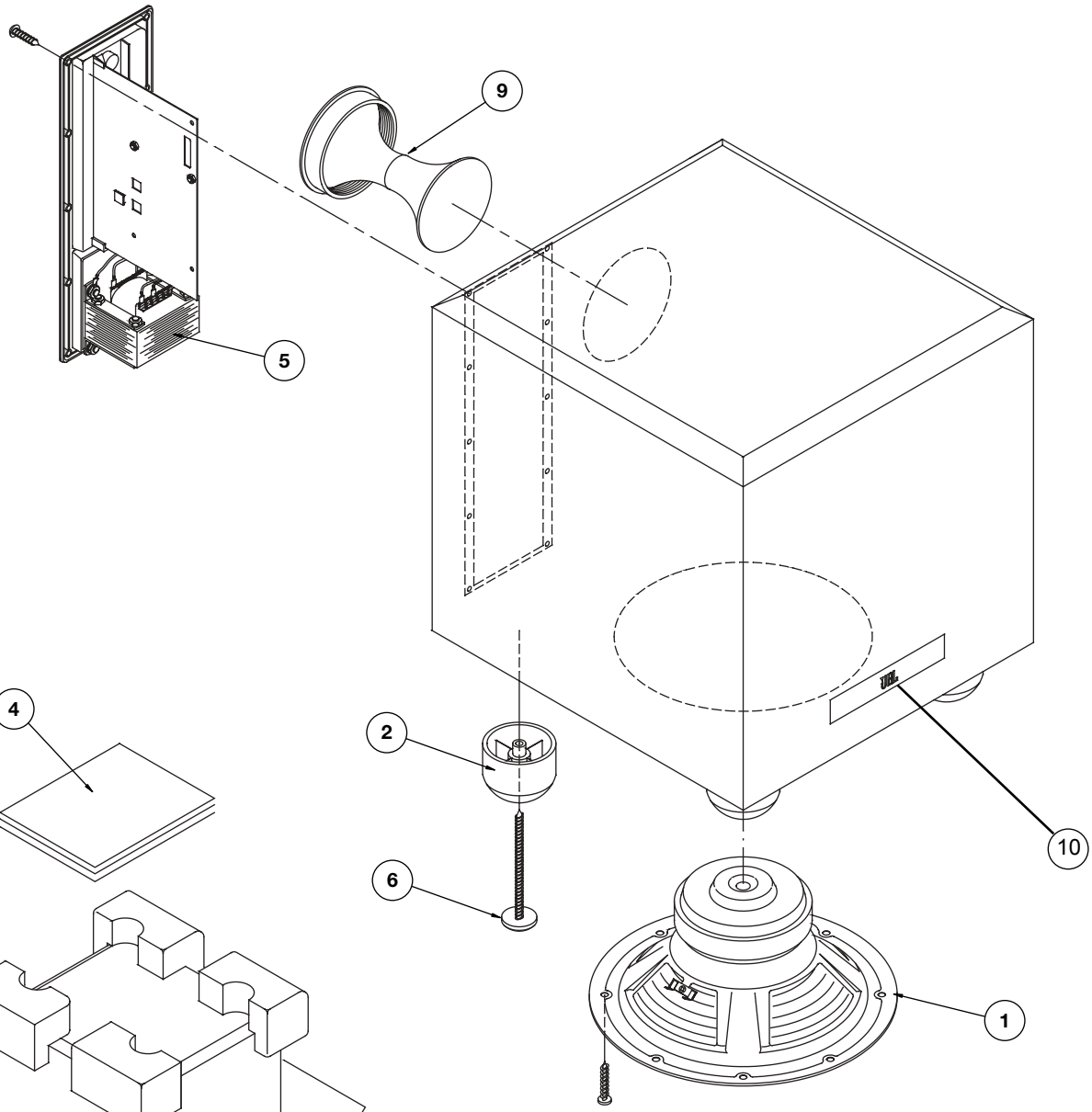
Replace both Q18 and Q22 MOSFET's in the circuit, even if only one seems to be damaged.

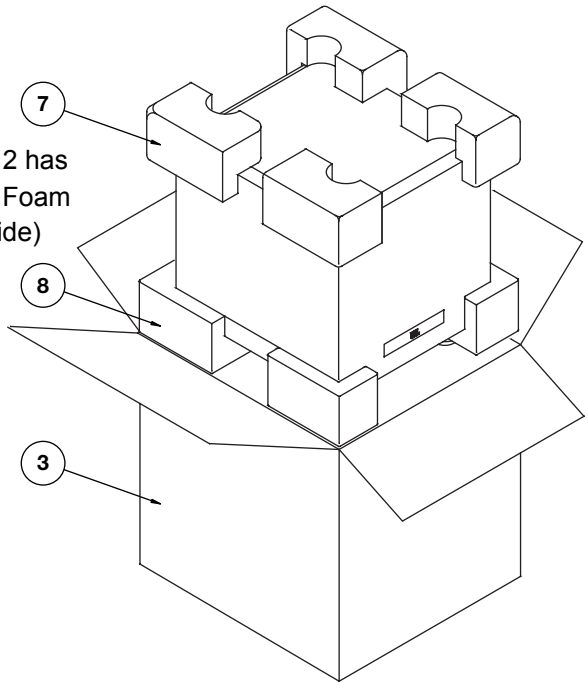
Do NOT mix & match these components from different manufacturers, or batches. They should be identical.

* Late version PB10 or PB12 subwoofers (Revision 2 in the service manual) can be identified by:

- Amplifier serial number starts with "HA"
- Output transistors in the open, on a large black heatsink
- Large plastic cup enclosing the rear of the amp assembly
- Main PCB, bottom, solder-side contains all SMD devices

Exploded and Packaging Views





(Rev 2 has 1 pc. Foam per side)

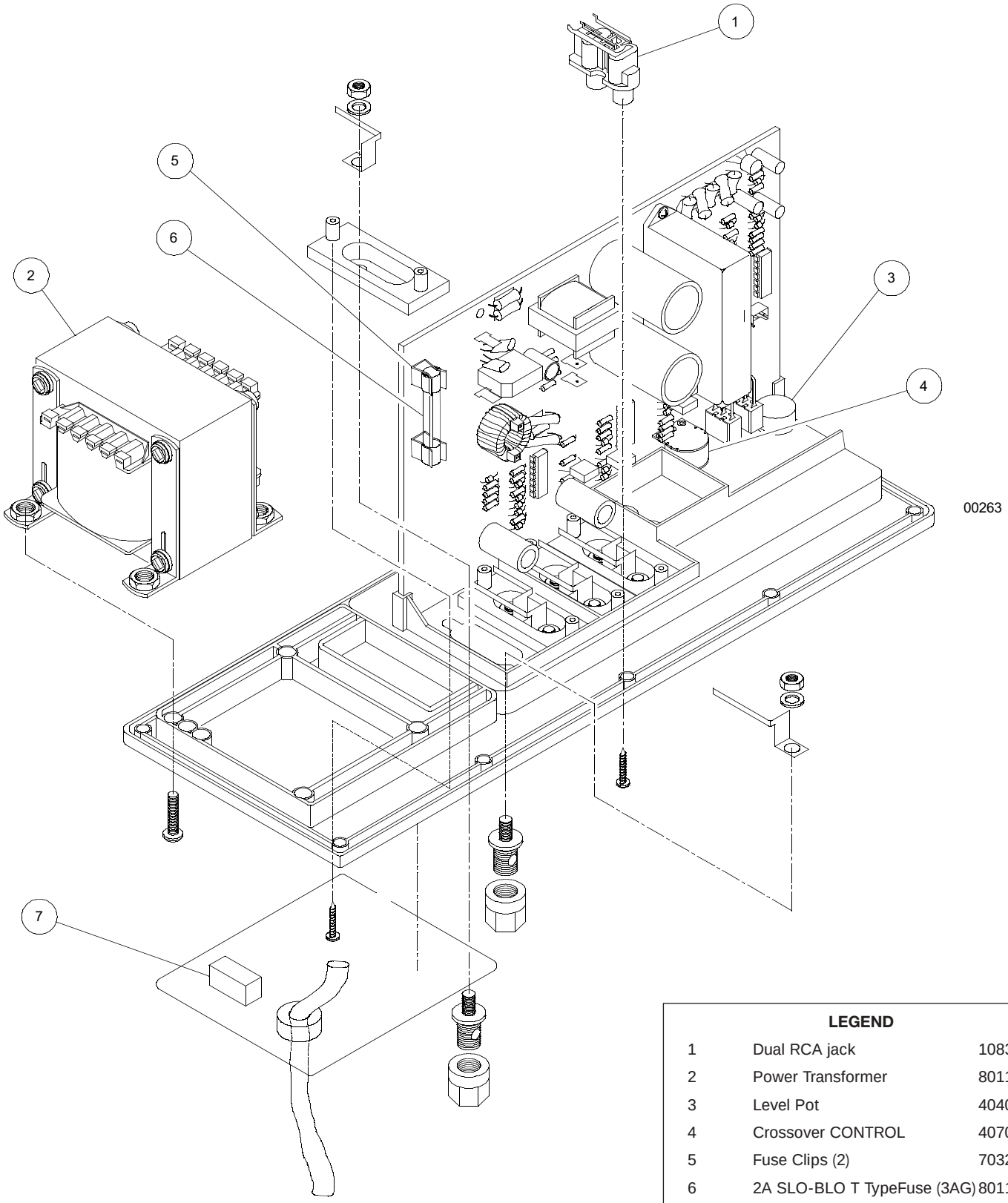
(IMAGE REDUCED)

MECHANICAL & PACKING PARTS LIST

Item #	Description	Qty	Revision 1 Part#	Revision 2 Part#
1	12" Woofer (DCR = 4.8 Ω)	1	203500	338128-001
2	Foot	4	203410	336486-001
3	Outer Carton	1	203420	338131-001
4	Owner's Manual 120V	1	203430	338129-001
	Survey Card	1	n/a	331384-001
	Warranty Card	1	n/a	331994-001
5	PB12 Amplifier Complete	1	Not For Sale	Not For Sale
6	Foot Screw	4	203411	763-31110-40
7	Foam corners (Top Corners)	4	203460	n/a
8	Foam corners (Bottom Corners)	4	203470	n/a
7 & 8	Foam End Pad (Top & Bottom)	2	n/a	338132-001
9	Port tube	1	Not For Sale	336799-001
10	Logo Badge	1	336485-001	336485-001
	LED Ass'y for Logo Badge	1	338125-001	338125-001

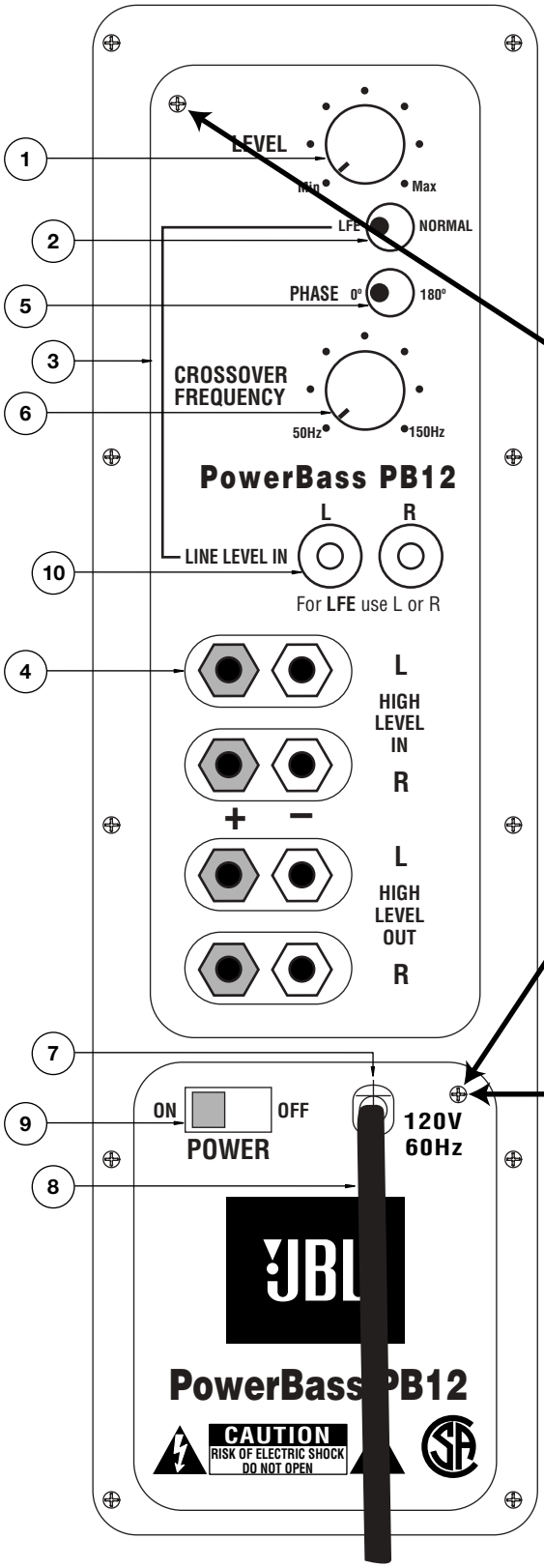
Identification Of PB12 Revisions 1 and 2 can be found on Page 2.

Amplifier Exploded View (Revision 1 Only)



LEGEND		
1	Dual RCA jack	108320
2	Power Transformer	80116
3	Level Pot	40402
4	Crossover CONTROL	40707
5	Fuse Clips (2)	70323
6	2A SLO-BLO T TypeFuse (3AG)	80117
7	Power Switch	70151

Amplifier Faceplate/Access



REMOVE THESE TWO SCREWS TO REMOVE REAR COVER AND ACCESS AMPLIFIER

LONGER SCREW HERE

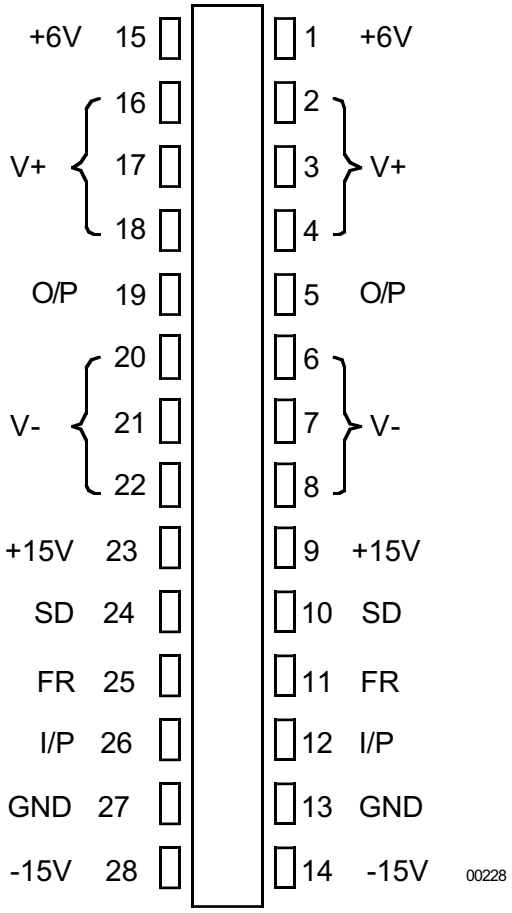
MECHANICAL & PACKING PARTS LIST

Item #	Description	Qty	Revision 1 Part#	Revision 2 Part#
1	Level Knob	1	70313	061-020000-000
2	LFE Defeat Switch	1	70150	074-030002-000
3	PB12 faceplate	1	70325	n/a
4	HI LEVEL Input/Output Jacks	4	108116	072-060170-000
5	Phase Switch	1	70150	074-030002-000
6	Crossover Frequency Knob	1	70313	061-020000-000
7	Strain Relief Plug	1	70305	061-314002-000
8	Power Cord	1	80105	083-041802-009
9	Power Switch	1	70151	074-020018-000
10	RCA Input jacks	1	108324	072-010007-000

Identification Of PB12 Revisions 1 and 2 can be found on Page 2.

Integrated Circuit Diagrams (Revision 1 Only)

S53AMI/S64AMI - Power Amp Module SAFETY PART



NOTE: THE FOLLOWING PROCEDURES MUST BE FOLLOWED WHEN INSTALLING NEW S53AMI/S64AMI AMP MODULES:

FAILURE TO FOLLOW ONE OR MORE OF THESE STEPS MAY RESULT IN THE INSTANT DESTRUCTION OF THE MODULE WHEN POWERED UP.

1. Align white indent marker on Amp Module with indent marker on main PCB; alternately observe position of label on top of the Module; incorrectly replacing the Module 180° in the PCB slot will result in its destruction.
2. All AC powered test instruments (meters, oscilloscopes, etc.) must have a floating ground, i.e., be connected to an isolation transformer.
3. Align and position the Amp Module before soldering.
4. Attach the Amp Module with the mounting screws before soldering or powering up.
5. Use only rosin-core or non-acid core solder; thoroughly de-flux the surfaces after soldering.

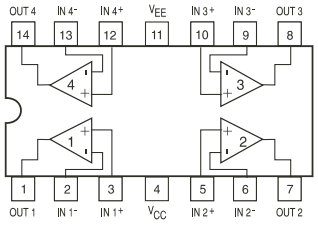
If the new S53AMI/S64AMI Amp Module has larger mounting hole(s) in the case, and the stock screws no longer will fit, and screws of the proper type cannot be obtained locally order:

(2) part# 60301S (screws)

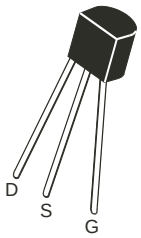
(2) part# 60301N (nuts)

NOTE: THE PB10/12 REVISION 1 AMPLIFIER MUST ALWAYS BE TESTED WITH A WOOFER OR 4 OHM RESISTIVE LOAD.

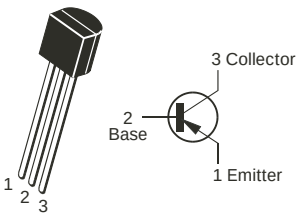
LM324, TLO64, U1, U2



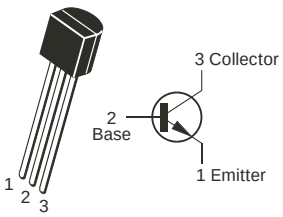
N-Chan JFET
Q1 2N5457



MPSA56, Q10, Q11



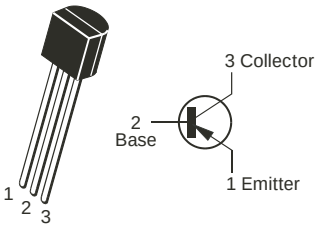
2N4401, Q12



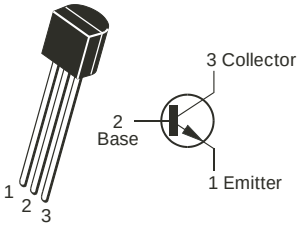
00227

Integrated Circuit Diagrams (Revision 2 Only)

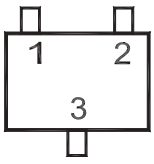
2N5401
Q1



MPSW06RLRA,
MPSW56RLRAMPQ,
MPS2222ARLRA,
2N2907A, 2N5551,
Q2, 16, 3, 21, 19, 23, 17

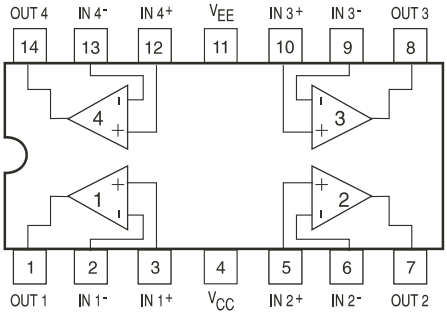


MMBT3904LTI SOT23,
MMBT3906LTI SOT23,
DTC114EK SMT3,
MMBT5401 LTI,
MMBT5551 LTI
Q11, 14, 13, 5, 8, 9, 6, 10,
12, 15, 7, 20, 24, 26, 25

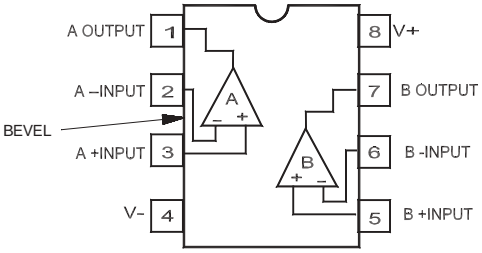


1) Emitter
2) Base
3) Collector

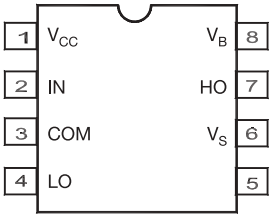
OPAMP, QUAD
TL074CDR
U2, 3



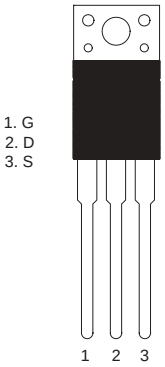
OPAMP, DUAL
TL072CDR SO-8,
NJM4558M-TE3
U5, 6, 4



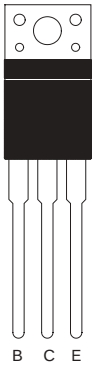
IR2111 HALF-BRIDGE
DRIVER
U7



MOSFET IRF640
Q18, 22



TIP31C
Q4



PB12 Testing Procedure (Revision 1 Only)

A. Power Amp Section

Resistance Check	Resistance from O/P of the module to GND should be >1M (NO LOAD)
	Resistance from V+ of the module to V- of the module should read >10k
	Resistance from V+ of the module to O/P of the module should read >1M
	Resistance from V- of the module to O/P of the module should read >1M

2. Power Up LED RED

With a 5mV signal to Low level input, LED should change to GREEN

-Voltage measurements (DVM)

	OP AMP	
LED	P-U1(1)	P-U1(7)
RED	0Vrms	14VDC
GREEN	12Vrms	-14VDC

3. D.C. Operation

-Voltage measurements (DVM) on Power Amp Module

Between	+6V	V+	O/P	V-	+15V	S/D	FR	I/P	GND	-15V
And This Point	V-	GND	GND	GND	GND	V-	GND	GND	GND	GND
Get this Reading	+5.75V	+91.2V	0V	-91.2V	+15.5V	+5.1V	0V	0V	0V	-15.5V

4. Check Switching Frequency

Use scope (EITHER USES AN ISOLATION TRANSFORMER OR ATTACHES THE PROBE TIP TO SPK- and REFERENCE LEAD TO SPK+)

A 10mV signal may need from the input to trigger the **Switch** turn on

Reading 100kHz +/-10%,500mVpp

B. Pre Amp Section

1. Low Level Input Sensitivity
   -Set up Turn level , Low-Pass Pot Fully CW and LFE switch off
   Generator set at 200mV@50Hz
   Signal to Low level input

00279-1

PB12 Testing Procedure (Cont.) (Revision 1 Only)

-Voltage measurements

OP AMP									SPEAKER OUTPUT
U1(7)	U2(7)	U1(1)	U2(1)	U1(14)	U2(14)	U2(8)	PU1(14)	PU1(8)	
354mV	529mV	520mV	736mV	699mV	661mV	1.40V	5.53V	4.79V	26.7V

2. High Level Input Sensitivity

-Set up Turn level , Lo Pass Pot Fully CW and LFE switch off
Set Generator at 2.0V@50Hz
Signal to High level input

-Voltage measurements 24.5V at speaker output

3. Low-Pass

-Set up Set Generator at 200mV@100Hz
Signal to Low level input
Measure voltage at speaker output

-Voltage measurement

Low-Pass Pot Setting	Output
CW	16.1V
CCW	4.60V

4. LFE

-Set up Set Generator at 200mV@200Hz
Signal to Low level input
Measure voltage at speaker output

-Voltage measurement

LFE Switch Setting	Output
OFF	702mV
ON	8.40V

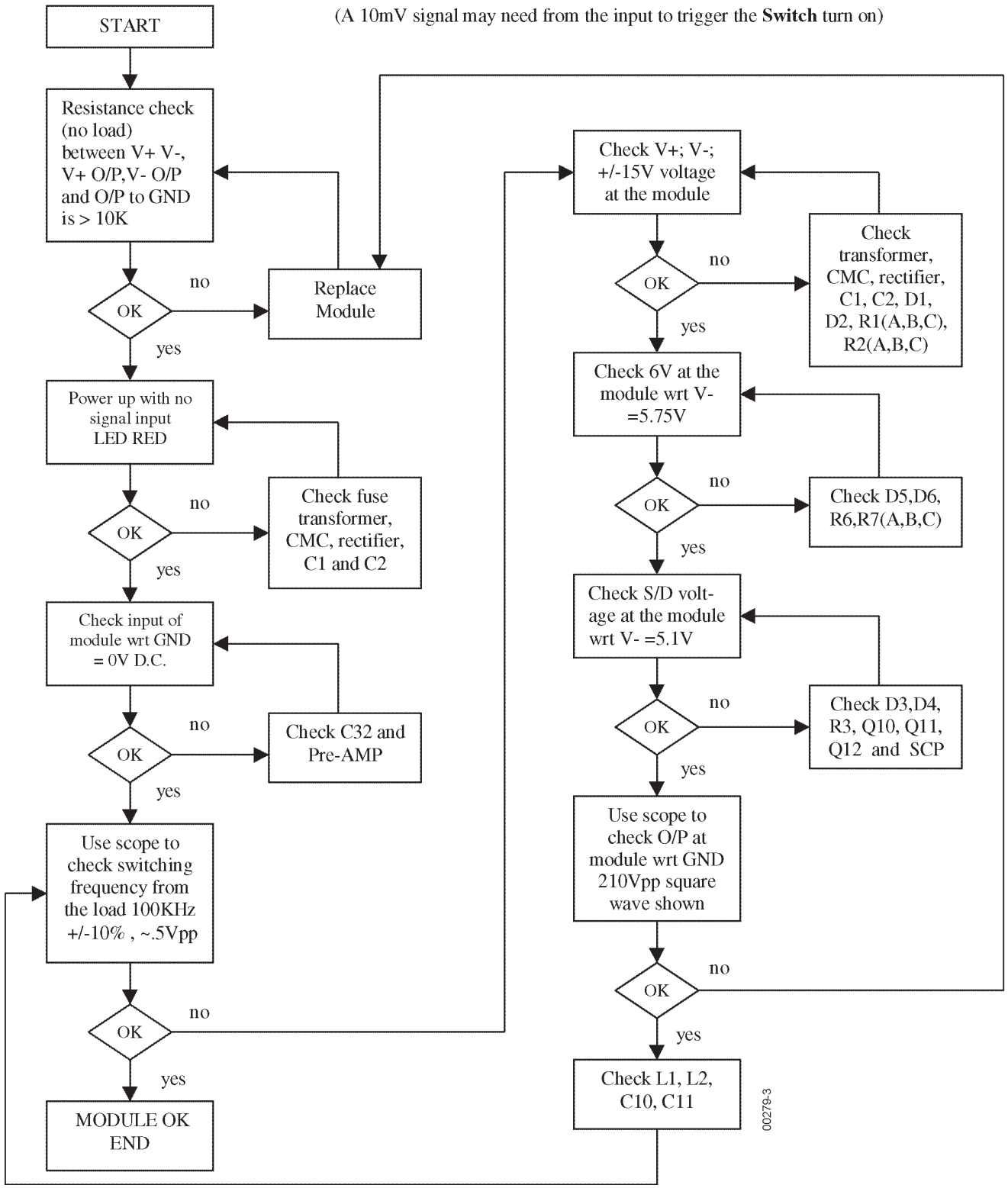
00279-2

See flow chart next page for diagnostics.

PB12 Testing Procedure (Cont.) (Revision 1 Only)

PB12 POWER MODULE TESTING FLOW CHART

CAUTION : MODULE OUTPUT IS FLOATING AND IS ***NOT*** PROTECTED AGAINST A SHORT TO GROUND. ALL TEST INSTRUMENTS CONNECTED TO THE OUTPUT ***MUST*** BE FLOATING. ATTACH THE SCOPE PROBE TIP TO SPK - and REFERENCE LEAD TO SPK+.



PB12 Testing Procedure (Cont.) (Revision 2 Only)

A. Power Amp Section

Resistance Check	Resistance from S+ (SPK O/P) to GND should be >1M Ω (NO LOAD)
	Resistance from V+ (C6 P+) to V- (C8 P-) gradually Fully CHARGED should read >10k Ω
	Resistance from V+ (C6 P+) to S+ (SPK O/P) should read >1MΩ
	Resistance from V- (C8 P-) to S+ (SPK O/P) should read >1M Ω

2. Power Up LED RED

With a 5mV signal to Low level input, LED should change to GREEN

-Voltage measurements (DVM)

	OP AMP	
LED	P-U4(1)	P-U4(7)
RED	0Vrms	11.84VDC
GREEN	7.13Vrms	-12.93VDC

3. D.C. Operation

-Voltage measurements (DVM) on CLASS D POWER AMP

Between	V+	Q4(E)	Q1(C)	Q10(C)	U7(1)	U7(2)	U7(4)	U7(6)	U7(7)	U7(8)
And This Point	GND	V-	GND	GND	GND	GND	GND	GND	GND	GND
Get this Reading	71.7V	0V	-71.7V	0V	-71.7V	-71.5V	-71.2V	0V	0V	4.65V

4. Check Switching Frequency

- Oscilloscope - **USE THE PROBE TIP TO U6(7) TO GND**
- Reading 100kHz +/-10%,24Vp-p

B. Pre Amp Section

Line Level Input Sensitivity

-Set up Turn level, X'OVER FREQ POT Fully CW and LFE switch off
Generator Set at 200mV@50Hz
Signal to Line level input

PB12 Testing Procedure (Cont.) (Revision 2 Only)

- Voltage measurements

OP AMP									SPEAKER
U2(1)	U2(14)	U2(8)	U3(7)	U3(1)	U3(14)	U3(8)	U5(7)	U5(1)	O/P
306.9mV	461mV	460mV	658mV	628mV	598mV	2.326V	2.02V	3.57V	23.33V

2. High Level Input Sensitivity

-Set up Turn level, X'OVER FREQ POT Fully CW and LFE switch off
Set Generator at 1.3V@50Hz
Signal to High level input

-Voltage measurements 15.3V at speaker output

3. Low-Pass

-Set up Set Generator at 200 mV@100Hz
Signal to Line level input
Measure voltage at S+ speaker output

-Voltage measurement

X'OVER FREQ. Setting	Output
CW	14.03V
CCW	4.8V

4. LFE

-Set up Set Generator at 200mV@200Hz
Signal to Line level input
Measure voltage at S+ speaker output

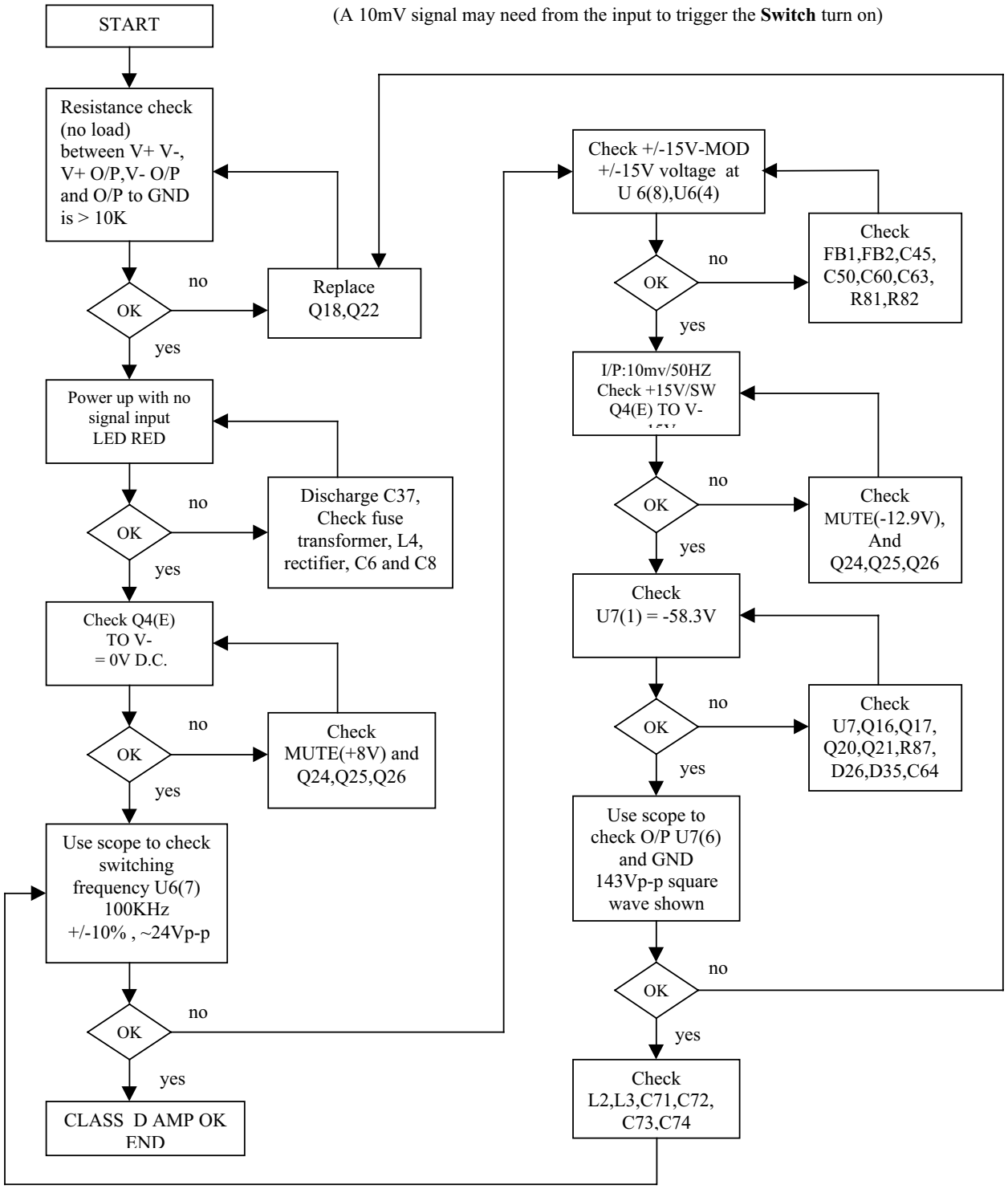
LFE switch Setting	Output
Normal	6V
LFE	18.32V

See flow chart next page for diagnostics.

PB12 Testing Procedure (Cont.) (Revision 2 Only)

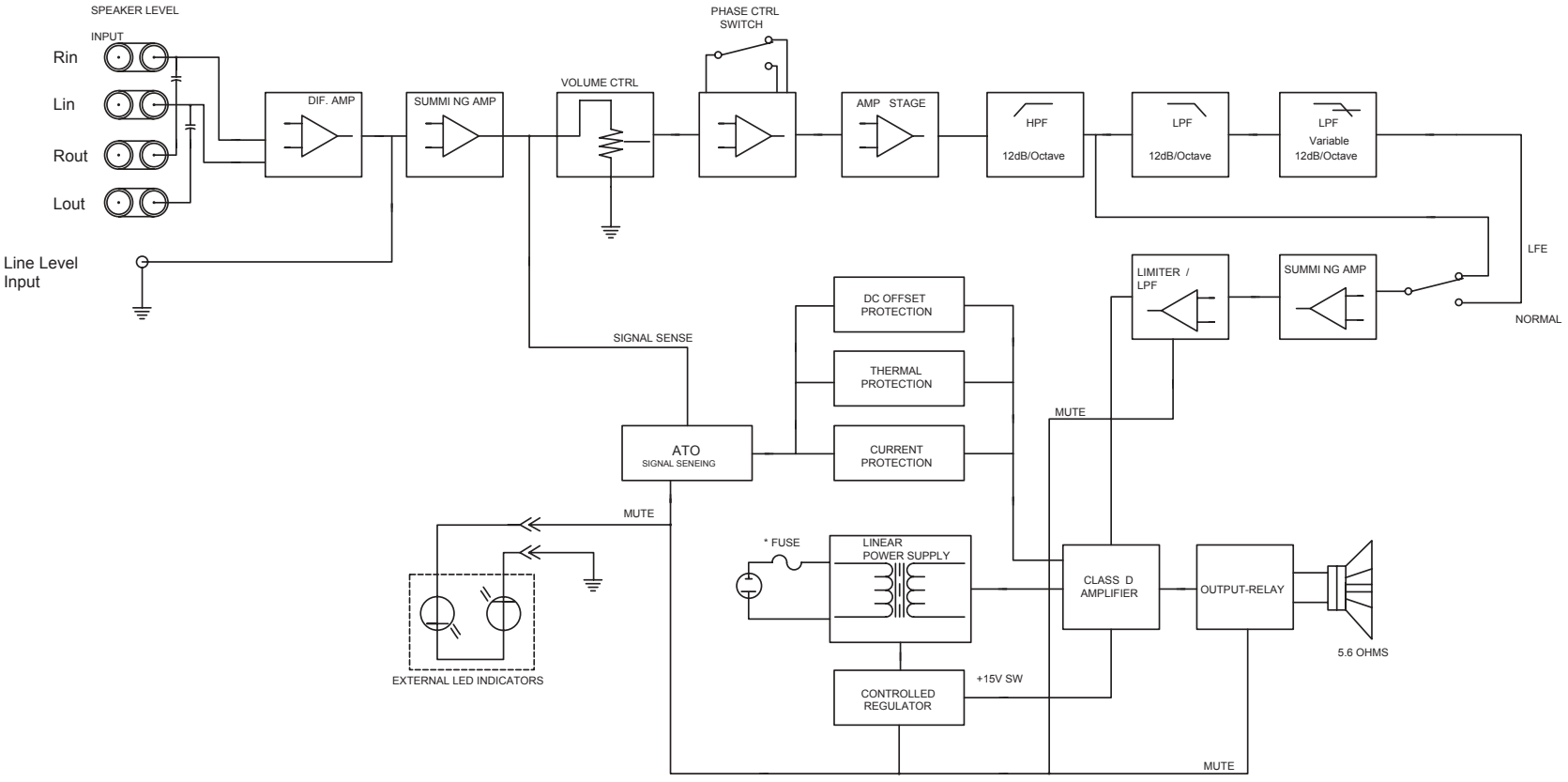
PB12 POWER MODULE TESTING FLOW CHART

CAUTION : SPEAKER OUTPUT IS FLOATING AND IS ***NOT*** PROTECTED AGAINST A SHORT TO GROUND. ALL TEST INSTRUMENTS CONNECTED TO THE OUTPUT ***MUST*** BE FLOATING. ATTACH THE SCOPE PROBE TIP TO S - and REFERENCE LEAD TO S+.



PB12 Block Diagram Revision 2 Only

RevNo	Revision note	Date	Signature	Checked



NOTE :
120 VAC T2A-250V
230 VAC T1.25A-250V

PB12 Electrical Parts List (Revision 1 Only)

PB12 POWER AMP section of PCB Version 6.3 -7.0.

Part #	Designator	Description			
50100	BR RECT	RS604	6AMP		Bridge rectifier
50105	D1	1N4744A	15V		1w Zener
50112	D10	1N5242B	12V		.5w Zener
50104	D11	1N4148			Sig Diode
50112	D12	1N5242B	12V		.5w Zener
50104	D13	1N4148			Sig Diode
50104	D14	1N4148			Sig Diode
50105	D2	1N4744A	15V		1w Zener
50114	D3	1N5265B	62V		.5w Zener
50104	D4	1N4148			Sig Diode
50113	D5	1N4735A	6.2V		1W
50103	D6	1N5234B	6V		.5w Zener
50104	D7	1N4148			Sig Diode
50104	D8	1N4148			Sig Diode
60157	Q1	2N5457	25V		N-chnl FET
60155	Q10	2N5401	120V		PNP 600mA
60155	Q11	2N5401	120V		PNP 600mA
60156	Q12	2N4401	40V		NPN 600mA
60102	U1	TLO64			Quad OpAmp
Capacitors					
30710	C1	2200uF	100V	+80 / -20	Electrolytic 105C
30718	C10	4u7F	100V		BP/NP Electr DF<.1
30523	C11	330nF	100V		mono ceramic
30710	C2	2200uF	100V	+80 / -20	Electrolytic 105C
30532	C20	220nF	250V		metallized polyester
30502	C21	100nF	50V		mono ceramic
30502	C22	100nF	50V		mono ceramic
30527	C24	330nF	50V		mono ceramic
	C25	NOT USED			
30508	C26	10nF	50V		mono ceramic
30513	C27	3n3F	50V		mono ceramic
30502	C3	100nF	50V		mono ceramic
30711	C32	22uF	35V	+80/-20	Electrolytic
30715	C40	10uF	16V	+80/-20	Electrolytic
30716	C41	1uF	16V	+80/-20	Electrolytic
30717	C42	100uF	16V	+80/-20	Electrolytic
30502	C6	100nF	50V		mono ceramic
30521	C7A	100nF	250V		ceramic/film
30521	C7B	100nF	250V		ceramic/film
	CW	NOT USED			
30505	CZ	100nF	100V		ceramic/film

PB12 Electrical Parts List (Revision 1 Only)

PB12 POWER AMP section of PCB Version 6.3 -7.0.

Part #	Designator	Description		
Resistors				
	R100	NOT USED		
40105	R10A	0.1R	.5W	metal
40105	R10B	0.1R	.5W	metal
40105	R10C	0.1R	.5W	metal
40420	R11	1k	.25W	carbon
40420	R12	1k	.25W	carbon
40417	R13	47k	.25W	carbon
40718	R14	3k3	.25W	carbon
	R15	NOT USED		
40735	R1A	7k5	2W	metal
40735	R1B	7k5	2W	metal
40735	R1C	7k5	2W	metal
40405	R21	4K7	.25W	carbon
40736	R22	42K2	.25W	metal
40737	R23	187k	.25W	metal
	R24	NOT USED		
	R25	NOT USED		
40722	R26	6k8	.25W	carbon
40738	R27	10k	2W	metal
40739	R28	1k2	0.25W	carbon
40739	R29	1k2	0.25W	carbon
40735	R2A	7k5	2W	metal
40735	R2B	7k5	2W	metal
40735	R2C	7k5	2W	metal
40703	R3	8M2	.25W	carbon
40738	R30	10k	2W	metal
40417	R31	47k	.25W	carbon
40417	R32	47k	.25W	carbon
40427	R33	23k7	.25W	metal
40403	R34	10k	.25W	metal
40740	R4	33k	1W	metal
40420	R40	1k	.25W	carbon
40701	R41	1000k	.25W	carbon
40741	R42	22k	.5W	metal
40701	R43	1000k	.25W	carbon
40406	R44	100k	.25W	carbon
40415	R45	470K	.25W	carbon
40701	R46	1000k	.25W	carbon
40409	R47	10k	.25W	carbon
40409	R48	10k	.25W	carbon
40726	R49	15k	.25W	carbon
40732	R5	56k2	.25W	metal
40727	R50	2k2	.25W	carbon
40111	R6	47R	.25W	carbon
40738	R7A	10k	2W	metal
40738	R7B	10k	2W	metal
40738	R7C	10k	2W	metal
40738	R8A	10k	2W	metal
40738	R8B	10k	2W	metal
	R9	NOT USED		

PB12 Electrical Parts List (Revision 1 Only)

PB12 POWER AMP section of PCB Version 6.3 -7.0.

Part #	Designator	Description		
Miscellaneous				
80121	L1	220uH	5 Amp	Gapped Ecore choke
80122	L2	8u5H	5 Amp	ferrite bead
80122	L3	8u5H	5 Amp	ferrite bead
80122	L4	8u5H	5 Amp	ferrite bead
80100	CMC	2m2H	5 Amp	choke
60302	MODULE	S64AMI		
108326	Led Harness	With two LED's,Molex plug	Glued into cabinet	
80116	Transformer	MCI4632	100VA	4632 transformer
70151	Switch	SW SPST		Power Switch
70322	LED socket			PCB mount LED socket
80117	3AG FUSE			2A SloBlo T type
70324	0.187" PCB Tabs	7		
70323	PCB Fuse Holders	2		
70325	PB12 faceplate			PB12 faceplate
80105	Power cord			Power cord
70305	Strain relief			Strain relief

PB12 PREAMP PCB Version #6.3

Part #	Designator	Description		
Semiconductors				
60102	U1	TLO 64		OP amp
60100	U2	LM324		OP amp
Capacitors	Film Caps may be used in any position EXCEPT C1,C2			
30707	C1	200uF	50V	BP Electrolytic
30504	C10	100nF	50V	mono ceramic
30504	C11	100nF	50V	mono ceramic
30504	C12	100nF	50V	mono ceramic
30504	C13	100nF	50V	mono ceramic
30530	C16	100nF	50V	mono ceramic
30531	C17	150nF	50V	mono ceramic
30100	C18	330pF	50V	mono ceramic
30100	C19	330pF	50V	mono ceramic
30707	C2	200uF	50V	BP Electrolytic
30502	C20	100nF	50V	mono ceramic
30502	C21	100nF	50V	mono ceramic
30502	C22	100nF	50V	mono ceramic
30502	C23	100nF	50V	mono ceramic
30101	C3	220pF	50V	mono ceramic
	C30	NOT USED		
30101	C4	220pF	50V	mono ceramic
30101	C5	220pF	50V	mono ceramic
30101	C6	220p	50V	mono ceramic
	C7	0r		
	C8	0r		
40730	C9	1k	.25W	Metal Resistor

PB12 Electrical Parts List (Revision 1 Only)

PB12 POWER AMP section of PCB Version 6.3 -7.0.

Part #	Designator	Description			
Resistors					
40405	R1	4k7	.25W	carbon	
40409	R10	10k	.25W	carbon	
40731	R11	59k	.25W	carbon	
40504	R12	45k3	.25W	metal	
40412	R13	33k2	.25W	metal	
40709	R14	68k1	.25W	metal	
	R15	NOT USED			
	R16	NOT USED			
40732	R17	56k2	.25W	metal	
40722	R18	6k8	.25W	carbon	
40722	R19	6k8	.25W	carbon	
40405	R2	4k7	.25W	carbon	
40722	R20	6k8	.25W	carbon	
	R21	0r			
40722	R22	6k8	.25W	carbon	
	R23	0r			
40109	R24	604r	.25W	metal	
40412	R25	33k2	.25W	metal	
40405	R26	4k7	.25W	metal	
40109	R27	604r	.25W	metal	
40412	R28	33k2	.25W	metal	
40406	R3	100k	.25W	carbon	
40403	R30	10k	.25W	metal	
40733	R33	12k1	.25W	metal	
40734	R34	120k	.25W	metal	
40451	R35	137k	.25W	metal	
40406	R4	100k	.25W	carbon	
40406	R5	100k	.25W	carbon	
40406	R6	100k	.25W	carbon	
40717	R8	2k7	.25W	carbon	
40717	R9	2k7	.25W	carbon	
Miscellaneous					
108320	RCA CONNECTOR			DUAL RCA-yellow	
108116	HI LEVEL I/O	Binding Post	OUT	Binding Post	
108116	HI LEVEL I/O	Binding Post	IN	Binding Post	
40402	LEVEL	5k POT		Log (A) Pot	
40707	Crossover CONTROL		20k POT		Lin (B) Pot.
70150	LFE switch	SW SPDT		mini-Toggle	
70150	Phase Switch	SW SPDT		mini-Toggle	

PB12 Electrical Parts List (Cont.) (Revision 1 Only)

PB12 POWER AMP section of PCB Version 7.2.

Part #	Designator	Description				
Resistors						
40735	R1A	7k5	2W	5%	metal	SAFETY
40735	R1B	7k5	2W	5%	metal	SAFETY
40735	R1C	7k5	2W	5%	metal	SAFETY
40735	R2A	7k5	2W	5%	metal	SAFETY
40735	R2B	7k5	2W	5%	metal	SAFETY
40735	R2C	7k5	2W	5%	metal	SAFETY
40703	R3	8M2	.25W	5%	carbon	
40740	R4	33k	1W	5%	metal	SAFETY
40732	R5	56k2	.25W	1%	metal	
40111	R6	47 ohms	.25W	5%	carbon	
40738	R7A	10k	2W	5%	metal	SAFETY
40738	R7B	10k	2W	5%	metal	SAFETY
40738	R7C	10k	2W	5%	metal	SAFETY
40738	R8A	10k	2W	5%	metal	SAFETY
40738	R8B	10k	2W	5%	metal	SAFETY
	R9	NOT USED				
40105	R10A	0.1 ohms	.5W	5%	metal	
40105	R10B	0.1 ohms	.5W	5%	metal	
40105	R10C	0.1 ohms	.5W	5%	metal	
40420	R11	1k	.25W	5%	carbon	
40420	R12	1k	.25W	5%	carbon	
40417	R13	47k	.25W	5%	carbon	
40718	R14	3k3	.25W	5%	carbon	
	R15	NOT USED				
40405	R21	4K7	.25W	5%	carbon	
40736	R22	42K2	.25W	1%	metal	
40737	R23	187k	.25W	1%	metal	
	R24	NOT USED				
	R25	NOT USED				
40722	R26	6k8	.25W	5%	carbon	
40738	R27	10k	2W	5%	metal	SAFETY
40739	R28	1k2	0.25W	5%	carbon	
40739	R29	1k2	0.25W	5%	carbon	
40738	R30	10k	2W	5%	metal	SAFETY
40417	R31	47k	.25W	5%	carbon	
40417	R32	47k	.25W	5%	carbon	
40427	R33	23k7	.25W	1%	metal	
40403	R34	10k	.25W	1%	metal	
40407	R35	220K	.25W	5%	carbon	
40420	R40	1k	.25W	5%	carbon	
40701	R41	1000k	.25W	5%	carbon	
40741	R42	22k	.5W	5%	metal	
40701	R43	1000k	.25W	5%	carbon	
40406	R44	100k	.25W	5%	carbon	
40415	R45	470K	.25W	5%	carbon	
40701	R46	1000k	.25W	5%	carbon	
40409	R47	10k	.25W	5%	carbon	
40409	R48	10k	.25W	5%	carbon	
40726	R49	15k	.25W	5%	carbon	
40727	R50	2k2	.25W	5%	carbon	

PB12 Electrical Parts List (Cont.)

PB12 POWER AMP section of PCB Version 7.2.

Part #	Designator	Description				
Capacitors						
30710	C1	2200uF	100V	+80/-20	Electrolytic 105C	SAFETY
30710	C2	2200uF	100V	+80/-20	Electrolytic 105C	SAFETY
30502	C3	100nF	50V	20%	mono ceramic	
30502	6	100nF	50V	20%	mono ceramic	
30521	C7A	100nF	250V	20%	ceramic/film	SAFETY
30521	C7B	100nF	250V	20%	ceramic/film	SAFETY
30718	C10	4u7F	100V	20%	BP/NP Electr DF<.1	
30523	C11	330nF	100V	20%	mono ceramic	
30532	C20	220nF	250V	20%	metallized polyester	
30502	C21	100nF	50V	20%	mono ceramic	
30502	C22	100nF	50V	20%	mono ceramic	
30527	C24	330nF	50V	5%	mono ceramic	
	C25	NOT USED				
30508	C26	10nF	50V	10%	mono ceramic	
30513	C27	3n3F	50V	10%	mono ceramic	
30711	C32	22uF	35V	+80/-20	Electrolytic	
30715	C40	10uF	16V	+80/-20	Electrolytic	
30716	C41	1uF	16V	+80/-20	Electrolytic	
30717	C42	100uF	16V	+80/-20	Electrolytic	
	CW	NOT USED				
30505	CZ	100nF	100V	20%	ceramic/film	
Semiconductors						
50105	D1	1N4744A	15V		1w Zener	
50105	D2	1N4744A	15V		1w Zener	
50114	D3	1N5265B	62V		.5w Zener	
50115	D4	1N4938		5%	Sig Diode	
	EDN 10025 changes D4 on poweramp section from 1N4148 to 1N4938 part # 50115 June 26					
50113	D5	1N4735A	6.2V	1W		
50103	D6	1N5234B	6V		.5w Zener	
50104	D7	1N4148		5%	Sig Diode	
50104	D8	1N4148		5%	Sig Diode	
50112	D10	1N5242B	12V	5%	.5w Zener	
50104	D11	1N4148			Sig Diode	
50112	D12	1N5242B	12V		.5w Zener	
50104	D13	1N4148			Sig Diode	
50104	D14	1N4148			Sig Diode	
60157	Q1	2N5457	25V		N-chnl FET	
60155	Q10	2N5401	120V		PNP 600mA	
60155	Q11	2N5401	120V		PNP 600mA	
60156	Q12	2N4401	40V		NPN 600mA	
50100	DIODE BRIDGE	RS604	6AMP		Bridge rectifier	SAFETY
60102 U1 TLO64 Quad OpAmp						
60302	MODULE	S64AMI			Power Amp Module	SAFETY
Miscellaneous						
80121	L1	220uH	5 Amp	5%	Gapped Ecore choke	
80122	L2	8u5H	5 Amp	5%	ferrite bead	

PB12 Electrical Parts List (Cont.)

PB12 PREAMP section of PCB Version 7.2.

Part #	Designator	Description				
80122	L3	8u5H	5 Amp	5%	ferrite bead	
80122	L4	8u5H	5 Amp	5%	ferrite bead	
80138	CMC	3m6H	5 Amp		choke	SAFETY
70322	LED 3	Molex 2 header			Male connector	
108326	LED Harness	Molex 2 socket	Glued into cabinet		With 2 Bi-color LED	
70323	3AG TYPE	3AG PC CLIP			2 PCB-mount fuse clips	SAFETY
80117	3AG FUSE	2A fuse			SloBlo, 3AG	SAFETY
70324	0.187" Tabs		6		0.187" PCB fastons	
70328	0.250" Tabs		1		0.250" PCB fastons	
70325	PB12 faceplate				PB12 faceplate	
80105	Power cord				Power cord	SAFETY
70305	Strain relief				Strain relief	SAFETY
70151	Switch	SW SPST			Power Switch	SAFETY
80116	Transformer	MCI4632	100VA		4632 transformer	SAFETY

PREAMP section of PCB Version 7.2

Resistors

40405	R1	4k7	.25W	5%	carbon
40405	R2	4k7	.25W	5%	carbon
40406	R3	100k	.25W	5%	carbon
40406	R4	100k	.25W	5%	carbon
40406	R5	100k	.25W	5%	carbon
40406	R6	100k	.25W	5%	carbon
40717	R8	2k7	.25W	5%	carbon
40717	R9	2k7	.25W	5%	carbon
40409	R10	10k	.25W	5%	carbon
40731	R11	59k	.25W	5%	carbon
40504	R12	45k3	.25W	1%	metal
40412	R13	33k2	.25W	1%	metal
40709	R14	68k1	.25W	1%	metal
	R15	NOT USED			
	R16	NOT USED			
40732	R17	56k2	.25W	1%	metal
40722	R18	6k8	.25W	5%	carbon
40722	R19	6k8	.25W	5%	carbon
40722	R20	6k8	.25W	5%	carbon
	R21	0 ohms			
40722	R22	6k8	.25W	5%	carbon
	R23	0 ohms			
40109	R24	604 ohms	.25W	1%	metal
40412	R25	33k2	.25W	1%	metal
40405	R26	4k7	.25W	1%	metal
40109	R27	604 ohms	.25W	1%	metal
40412	R28	33k2	.25W	1%	metal
40403	R30	10k	.25W	1%	metal
40733	R33	12k1	.25W	1%	metal
40734	R34	120k	.25W	1%	metal
40451	R35	137k	.25W	1%	metal
40402	LEVEL	5k POT		20%	Log (A) Pot
40707	LOPASS	Dual 20k POT		20%	Lin (B) Pot.

PB12 Electrical Parts List (Cont.)

PB12 PREAMP section of PCB Version 7.2.

Part #	Designator	Description			
Capacitors Film Caps may be used in any position EXCEPT C1, C2					
30707	C1	200uF	50V	20%	BP Electrolytic
30707	C2	200uF	50V	20%	BP Electrolytic
30101	C3	220pF	50V	20%	mono ceramic
30101	C4	220pF	50V	20%	mono ceramic
30101	C5	220pF	50V	20%	mono ceramic
30101	C6	220p	50V	20%	mono ceramic
	C7	0r			
	C8	0r			
40730	C9	1k	.25W	1%	Metal Resistor
30504	C10	100nF	50V	10%	mono ceramic
30504	C11	100nF	50V	10%	mono ceramic
30504	C12	100nF	50V	10%	mono ceramic
30504	C13	100nF	50V	10%	mono ceramic
30530	C16	100nF	50V	5%	mono ceramic
30531	C17	150nF	50V	5%	mono ceramic
30100	C18	330pF	50V	20%	mono ceramic
30100	C19	330pF	50V	20%	mono ceramic
30502	C20	100nF	50V	20%	mono ceramic
30502	C21	100nF	50V	20%	mono ceramic
30502	C22	100nF	50V	20%	mono ceramic
30502	C23	100nF	50V	20%	mono ceramic
	C30	NOT USED			
Semiconductors					
50104	D50	1N4148		5%	Sig Diode
50104	D51	1N4148		5%	Sig Diode
50104	D52	1N4148		5%	Sig Diode
50104	D53	1N4148		5%	Sig Diode
50104	D54	1N4148		5%	Sig Diode
50104	D55	1N4148		5%	Sig Diode
60102	U1	TLO 64			Quad OP-AMP
60100	U2	LM324			Quad OP-AMP
Miscellaneous (See pages 15-17 for more external parts)					
70150	LP DEFEAT	SW SW SPDT	mini-Toggle		
70150	PHASE SWITCH	SW SPDT	mini-Toggle		
108324	Li, Ri	RCA connector	90 Deg		DUAL RCA-yellow
108116	HI LEVEL I/O	Binding Post	OUT		Binding Post
108116	HI LEVEL I/O	Binding Post	IN		Binding Post

PB12 Electrical Parts List (Cont.)
Revision 2 Only

Part Number	Description		Qty	Reference designators
Resistors				
020-220497-120	Film Resistor	2K2 1/4W J	1	R11
021-100401-120	MOF Resistor	1K 1W J	1	R103
021-120403-020	MOF Resistor	1K2 3WS J	1	R9
021-120405-020	MOF Resistor	1K2 5WS J	1	R6
022-500003-020	KNP Resistor	0 ohms05 3WS J	1	R104
024-000098-120	SMD Resistor	0 ohms 1/8W J	2	R125, 126
024-100298-120	SMD Resistor	10 ohms 1/8W J	2	R81, 82
024-100398-120	SMD Resistor	100 ohms 1/8W J	1	R62
024-100498-120	SMD Resistor	1K 1/8W J	10	R79, 83, 92, 95, 96, 105, 108, 127, 65
024-100598-120	SMD Resistor	10K 1/8W J	30	R2, 17, 19, 20, 21, 37, 54, 58, 63, 69, 71, 72, 74, 75, 84, 88, 89, 97, 106, 109, 111, 113-117, 119, 120, 123, 124
024-100698-120	SMD Resistor	100K 1/8W J	6	R3, 22-25, 112
024-110598-100	SMD Resistor	11K 1/8W F	1	R98
024-120698-120	SMD Resistor	120K 1/8W J	1	R39
024-121598-100	SMD Resistor	12K1 1/8W F	1	R38
024-137698-100	SMD Resistor	137K 1/8W F	1	R32
024-150498-120	SMD Resistor	1K5 1/8W J	2	R67, 68
024-180598-120	SMD Resistor	18K 1/8W J	1	R29
024-187698-100	SMD Resistor	187K 1/8W F	1	R45
024-200598-120	SMD Resistor	20K 1/8W J	1	R94
024-220398-120	SMD Resistor	220 ohms 1/8W J	1	R90
024-220498-121	SMD Resistor	2K2 1/8W J	3	R1, 87, 61
024-220598-120	SMD Resistor	22K 1/8W J	1	R118
024-220798-120	SMD Resistor	2M2 1/8W J	2	R80, 121
024-237598-120	SMD Resistor	23K7 1/8W F	1	R48
024-243698-100	SMD Resistor	243K 1/8W F	1	R36
024-270498-120	SMD Resistor	2K7 1/8W J	2	R73, 64
024-300398-120	SMD Resistor	300 ohms 1/8W J	1	R55
024-300598-120	SMD Resistor	30K 1/8W J	1	R56
024-330498-120	SMD Resistor	3K3 1/8W J	9	R7, 8, 26, 27, 12-15, 59
024-330598-120	SMD Resistor	33K 1/8W J	2	R4, 5
024-360498-120	SMD Resistor	3K6 1/8W J	1	R28
024-390498-120	SMD Resistor	3K9 1/8W J	1	R93
024-390598-120	SMD Resistor	39K 1/8W J	1	R77
024-430498-100	SMD Resistor	4K3 1/8W F	1	R78
024-453598-100	SMD Resistor	45K3 1/8W F	1	R30
024-470298-120	SMD Resistor	47 ohms 1/8W J	2	R101, 102
024-470398-120	SMD Resistor	470 ohms 1/8W J	3	R76, 99, 100
024-470498-120	SMD Resistor	4K7 1/8W J	2	R85, 86
024-470598-120	SMD Resistor	47K 1/8W J	4	R44, 47, 49, 107
024-470698-120	SMD Resistor	470K 1/8W J	1	R70
024-470798-120	SMD Resistor	4.7M 1/8W J	1	R60
024-487498-100	SMD Resistor	4K87 1/8W F	2	R51, 53
024-510398-120	SMD Resistor	510 ohms 1/8W J	1	R57
024-560598-120	SMD Resistor	56K 1/8W J	1	R122
024-620398-100	SMD Resistor	620 ohms 1/8W F	2	R16, 18
024-680498-120	SMD Resistor	6.8K 1/8W J	6	R46, 91, 40, 41, 43, 42
024-680598-120	SMD Resistor	68K 1/8W J	6	R33, 34, 31, 50, 52, 66
024-820598-120	SMD Resistor	82K 1/8W J	1	R69
026-200595-269	VR2 FREQUENCY POT	PN:RD163121R034-20KBx2(EJ)	1	VR2
026-500495-252	VR1 LEVEL POT	P/N:RK163111R522-5KA (EJ)	1	VR1

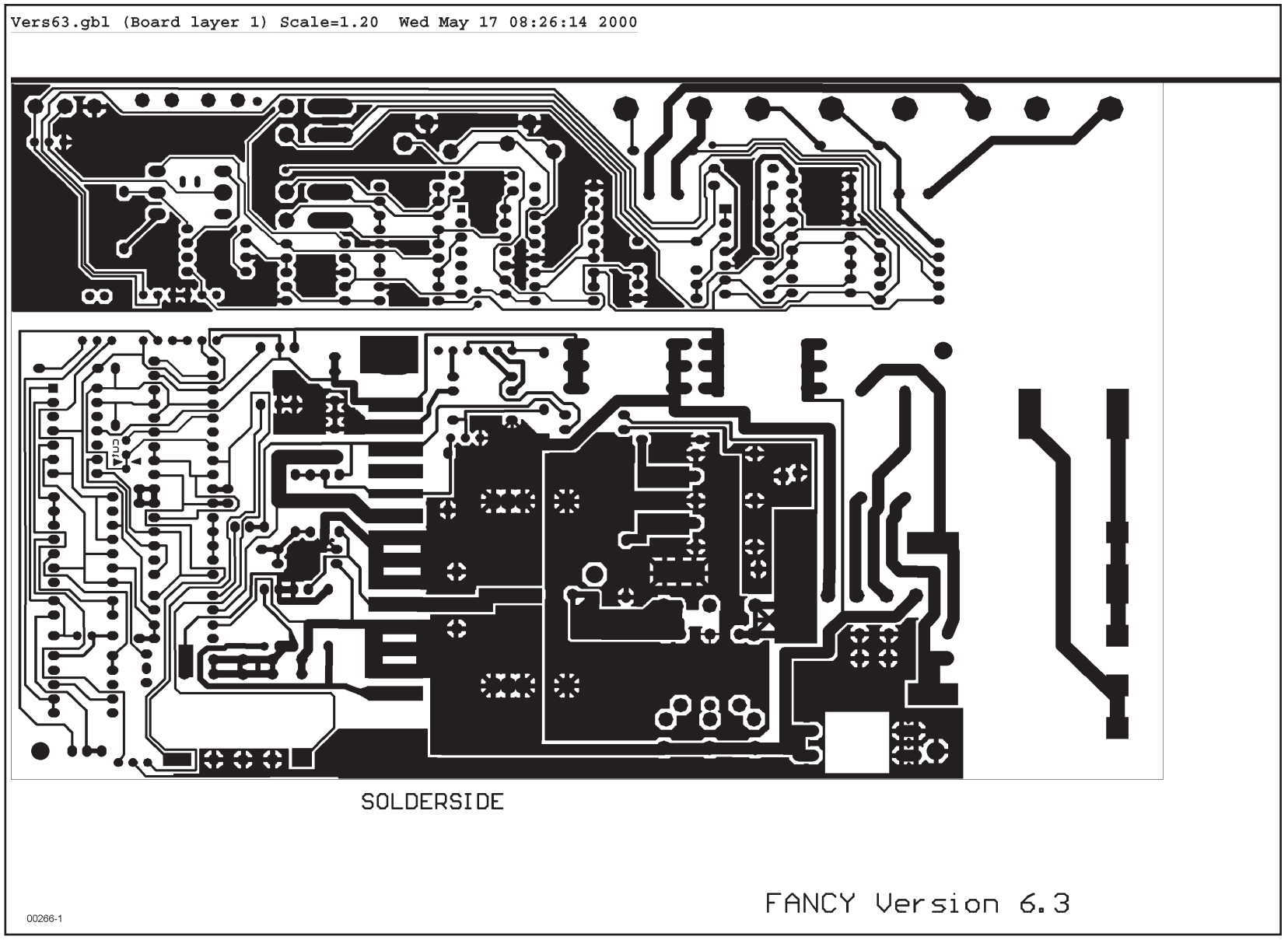
PB12 Electrical Parts List (Cont.)
Revision 2 Only

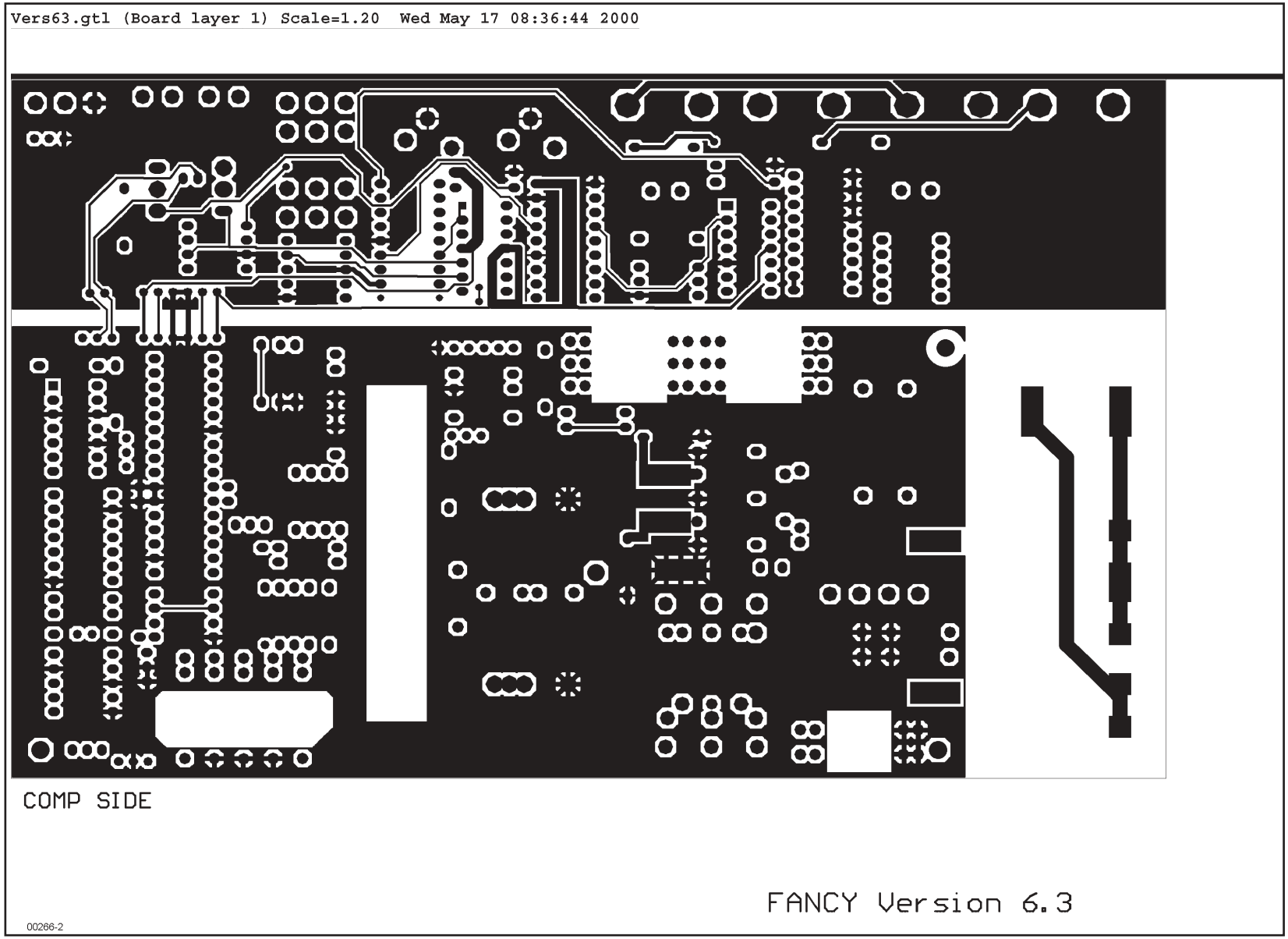
Part Number	Description		Qty	Reference designators
Capacitors				
031-100244-100	SMD Ceramic Capacitor	0u01/50V K	7	C33, 45, 51, 66, 67, 5, 10
031-100343-100	SMD Capacitor	100pF/50V J	3	C16, 36, 58
031-100344-100	SMD Capacitor	0u1/50V K	16	C11, 42-44, 46-49, 52, 54, 55, 60, 63, 71, 74, 77
031-100364-100	SMD Capacitor	0.1uF/100V K	2	C3, 7
031-220344-100	SMD Capacitor	220pF/50V J	5	C14, 15, 20, 21, 19
031-330444-300	SMD Capacitor	3300pF/50V K	2	C40, 34
031-470244-102	SMD Capacitor	0u047/50V K	2	C62, 59
031-560243-100	SMD Capacitor	56pF/50V J	2	C57, 61
031-560343-102	SMD Capacitor	560pF/50V J	1	C56
032-100484-200	END PE Capacitor	1uF/250V K	2	C70, C70B
033-200645-300	NP Capacitor	200u/50V M	2	C17, 18
033-470444-270	NPE	4u7/50V K	1	C73
033-680464-270	NPE	6u8/100V K	1	C72
034-100525-300	Electrolytic Capacitor	10uF/25V M	1	C35
034-100625-300	Electrolytic Capacitor	100uF/25V M	1	C64
034-220525-301	Electrolytic Capacitor	22uF/25V M	6	C4, 9, 41, 39, 50, 53
034-220615-301	Electrolytic Capacitor	220uF/16V M	1	C37
034-330525-300	Electrolytic Capacitor	33uF/25V M	1	C1
034-330615-300	Electrolytic Capacitor	330uF/16V M	2	C12, 78
034-330780-300	Electrolytic Capacitor	3300uF/80V M	2	C6, 8
034-470415-301	Electrolytic Capacitor	4u7/50V M	1	C2
034-470615-301	Electrolytic Capacitor	470uF/16V M	1	C65
038-100363-300	MPE Capacitor	0u1/100V J	7	C68, 69, 26, 27, 28, 29, 30
038-150393-300	MPE Capacitor	0u15/63V J	1	C25
038-330393-300	MPE Capacitor	0u33/63V J	1	C31
039-100390-100	UL Capacitor	0u1/275V	1	CXAC1
Semiconductors				
051-000600-100	NPN Transistor	MPSW06RLRA	2	Q2, Q16
051-005600-100	NPN Transistor	MPSW56RLRA MPQ TO-92	1	Q3
051-222200-100	NPN Transistor	PN:MPS2222ARLRA TO-92	1	Q21
051-290700-100	NPN Transistor	P2N2907A TO-92	2	Q19, 23
051-540101-000	PNP Transistor	2N5401 TO-92	1	Q1
051-555100-000	NPN Transistor	2N5551 TO-92	1	Q17
052-400080-000	Bridge rectifier	PN:RS804 400V, 8A	1	BR1
053-211100-000	IC;Half-Bridge Driver	PN:IR2111	1	U7
054-000100-100	SMD Diode	ES1D 200V, 1A, 35ns	5	D5, 26, 29, 33, 38
054-001001-100	SMD Zener Diode	10V SOT-23 DZ23C10	1	D35
054-001500-100	SMD Zener Diode	15V SOT-23 DZ23C15	3	D6, 7, 9
054-007200-100	SMD IC Dual Op-Amp	TL072CDR SO-8 (TI)	2	U5, 6
054-007400-100	SMD IC Quad Op-Amp	PN:TL074CDR (TI)	2	U2, 3
054-033904-100	SMD TR NPN (MOTOROLA)	MMBT3904LT1 SOT23	6	Q11, 14, 13, 5, 8, 9
054-033906-100	SMD TR PNP (MOTOROLA)	MMBT3906LT1 SOT23	4	Q6, 10, 12, 15
054-045580-100	SMD Dual Op-Amp	NJM4558M-TE3 DMP-8	1	U4
054-050600-100	SMD Zener Diode	5.6V SOT-23 DZ23C5V6	3	D24, 36, 37
054-211400-100	SMD NPN Transistor	DTC114EK SMT3	1	Q7
054-414803-100	SMD Zener Diode	LL4148	26	D1-4, 8, 10-23, 27, 28, 30-32, 34, 39
054-540100-100	SMD PNP Transistor	MMBT5401 LT1	3	Q20, 24, 26
054-555100-100	SMD NPN Transistor	MMBT5551 LT1	1	Q25
051-003100-000	NPN Transistor	TIP31C TO-220	1	Q4
FE1064011100	MOSFET	IRF640 TO-220	2	Q18, 22

PB12 Electrical Parts List (Cont.)
Revision 2 Only

Part Number	Description		Qty	Reference designators
Miscellaneous				
041-115001-000	Bead Coil	YT-10911	1	L5
043-300101-000	Inductor	30uH YT-10033	1	L2
043-324300-000	Inductor	324uH YT-10778	1	
043-560200-000	Inductor	56uH YT-10779	1	
043-700101-000	Toroidal Inductor	70uH YT-10682	1	L3
044-100100-000	SMD Ferrite Bead	600R/100MHz 1206	2	FB1, FB2
072-010007-000	RCA Housing	SCJ-1020 2P(G) WHT, RED	1	CONN1
072-040039-000	Terminal	PC205 (t=0.8m/m) T205MA	1	S-
072-040064-000	Terminal	PC250(t=0.8), T250MA	1	S+
072-040096-000	Terminal	(t=0.8mm) PC187(0.8)	7	AC1, AC3, T1, T2, AC2, SW2, SW4
072-040169-000	Connector	2 PIN JS-1001-2 P:2.5mm	1	CONN3A
072-060170-000	Binding Posts	HI LEVEL Input/Output Jacks	4	BP/IP, BP/OP
093-105202-300	Fuse	UL GSL(2AG) 250V, 5*20mm	1	
073-050001-000	FUSE CLIP	P/N:CFFH1206	2	
074-030002-000	Toggle SW	P/N L101	2	SW5, SW6
074-300018-000	Relay	PN:943-1C-48D	1	K1
042-010053-003	Power Transformer	YT-10616-4	1	
061-020000-000	Level-Volume Knob	20 x 15 m/m UL 94V-0 Blk	2	
061-314002-000	Strain relief	SB4F-2	2	
063-010012-000	Clamps for output transistors	TRK-1	4	
063-531808-000	Rear plastic cover w/G	ABS	1	
073-032315-601	Heatsink	70 x 58 x 20 mm	1	
074-020018-000	Main Power switch	RF1003-BB4-0	1	
083-041802-009	Power Cord 120V	SPT-2 BLK #18 T187	1	
181-911600-161	Output wires	#16 AWG UL1007 Blk	1	
181-911655-135	Output wires	#16 AWG UL1007 Green	1	
181-921600-000	Output wires	#16 AWG UL1015 Blk	1	
181-921699-000	Output wires	#16 AWG UL1015 Wht	1	

PB12 (PCB version 6.3) (Revision 1 Only)

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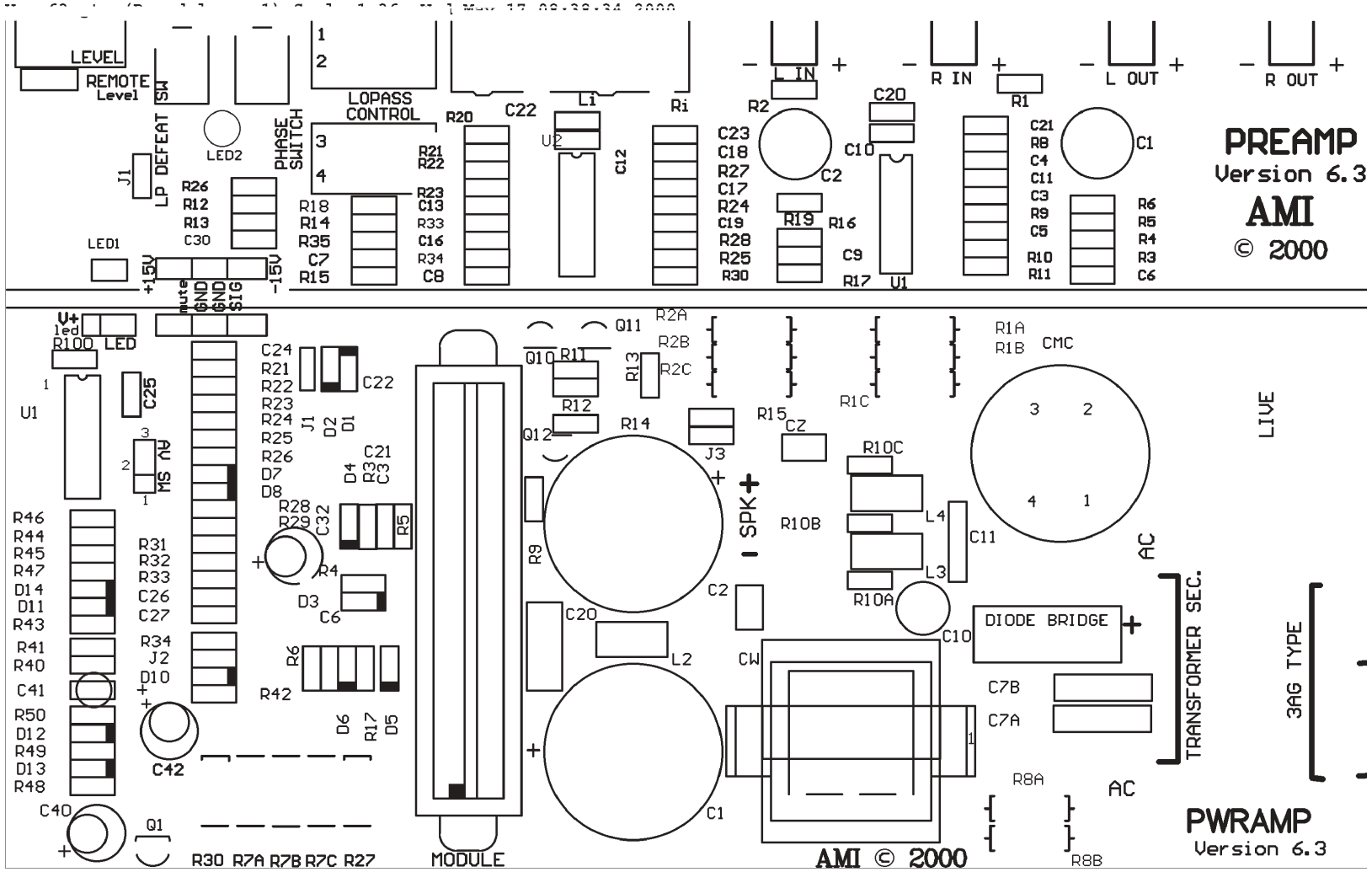
COMP SIDE
FANCY Version 6.3
00266-2

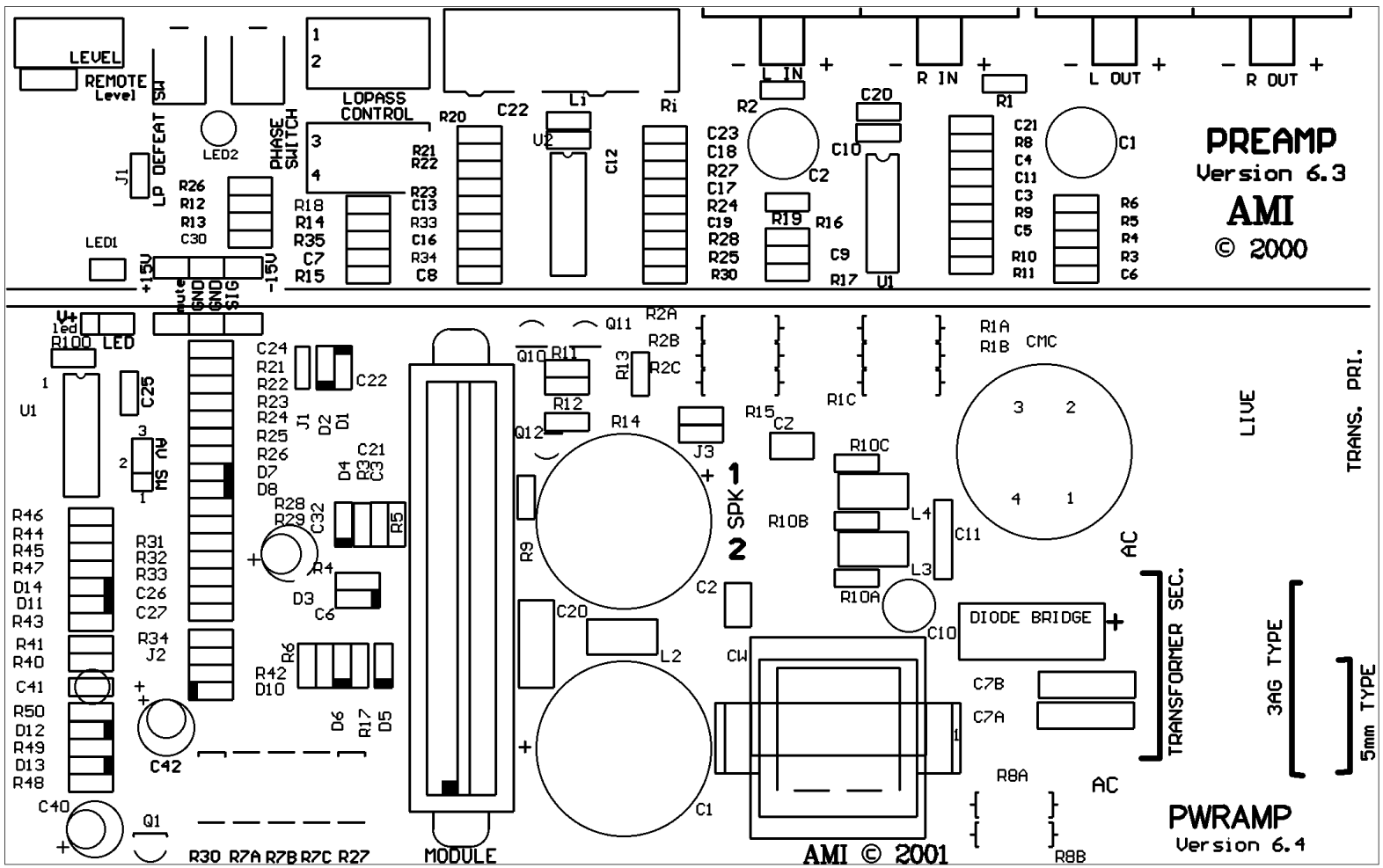


SILKSCREEN

00266-3

FANCY Version 6.3

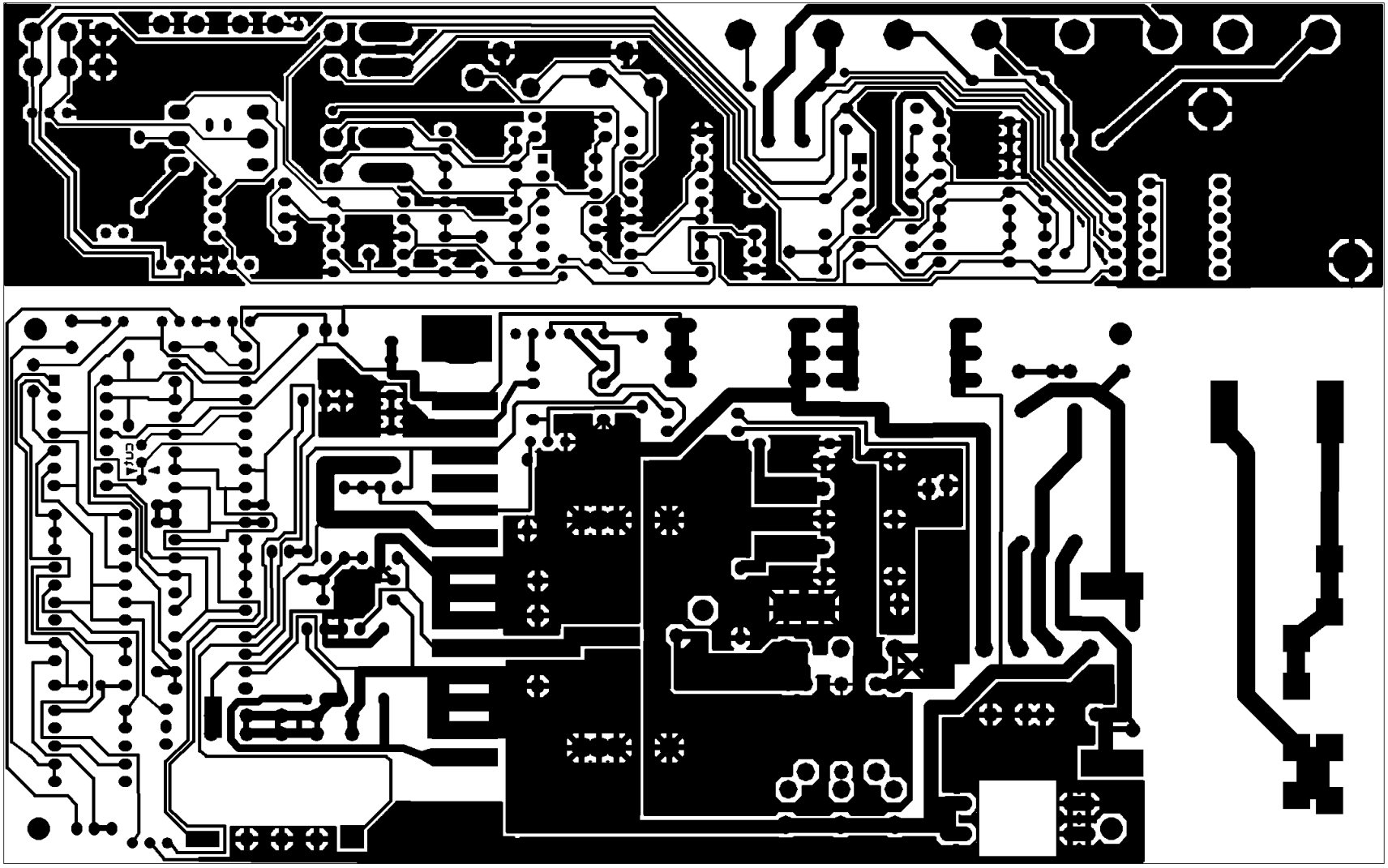
PB12 (PCB version 6.4) Power Amp Only (Revision 1 Only)



SILKSCREEN

FANCY Version 6

PB12 (PCB version 7.2) (Revision 1 Only)

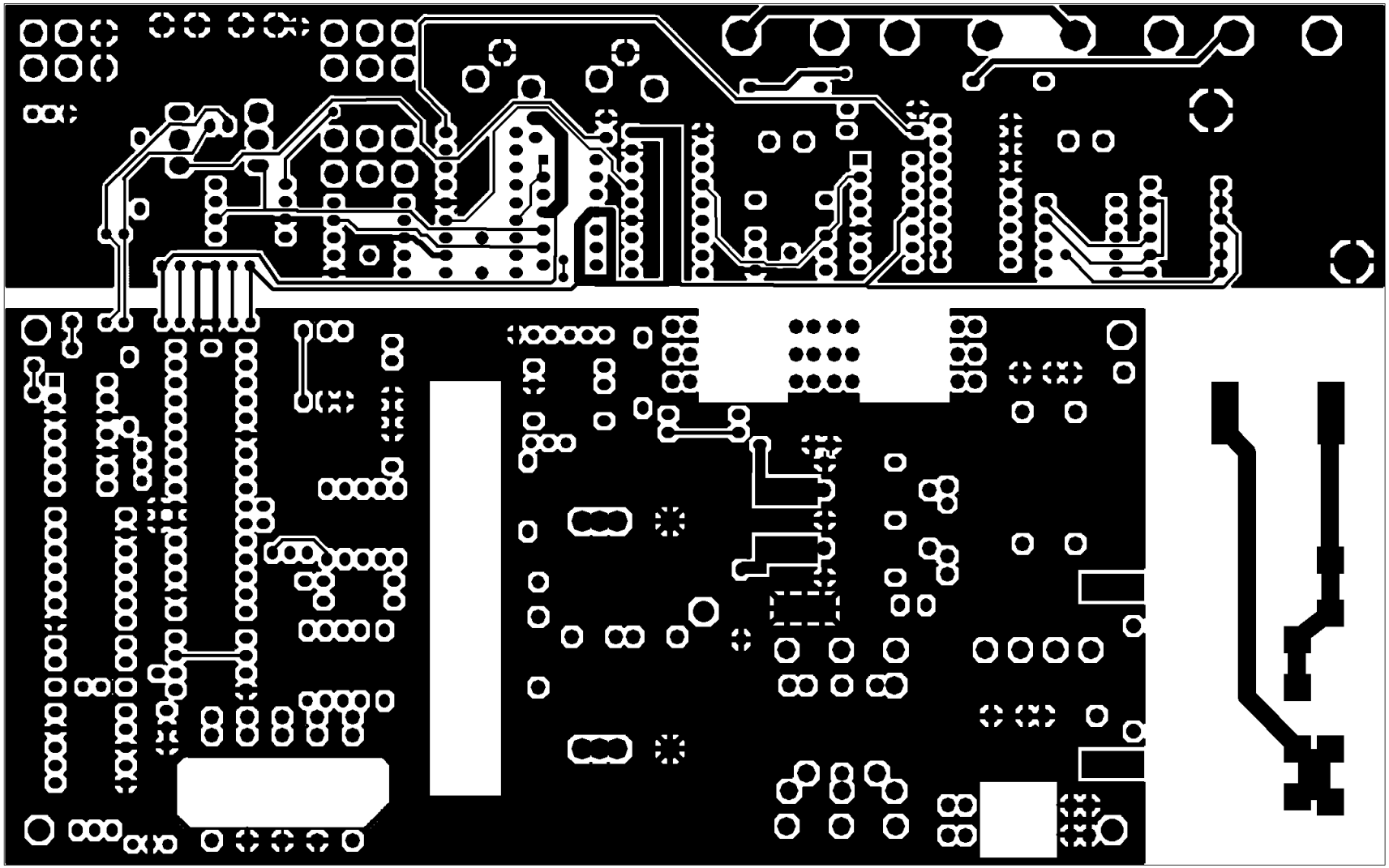


SOLDERSIDE

FANCY Version 7.2

.125 holes NOT thru-plated

PB12 (PCB version 7.2) (Revision 1 Only)

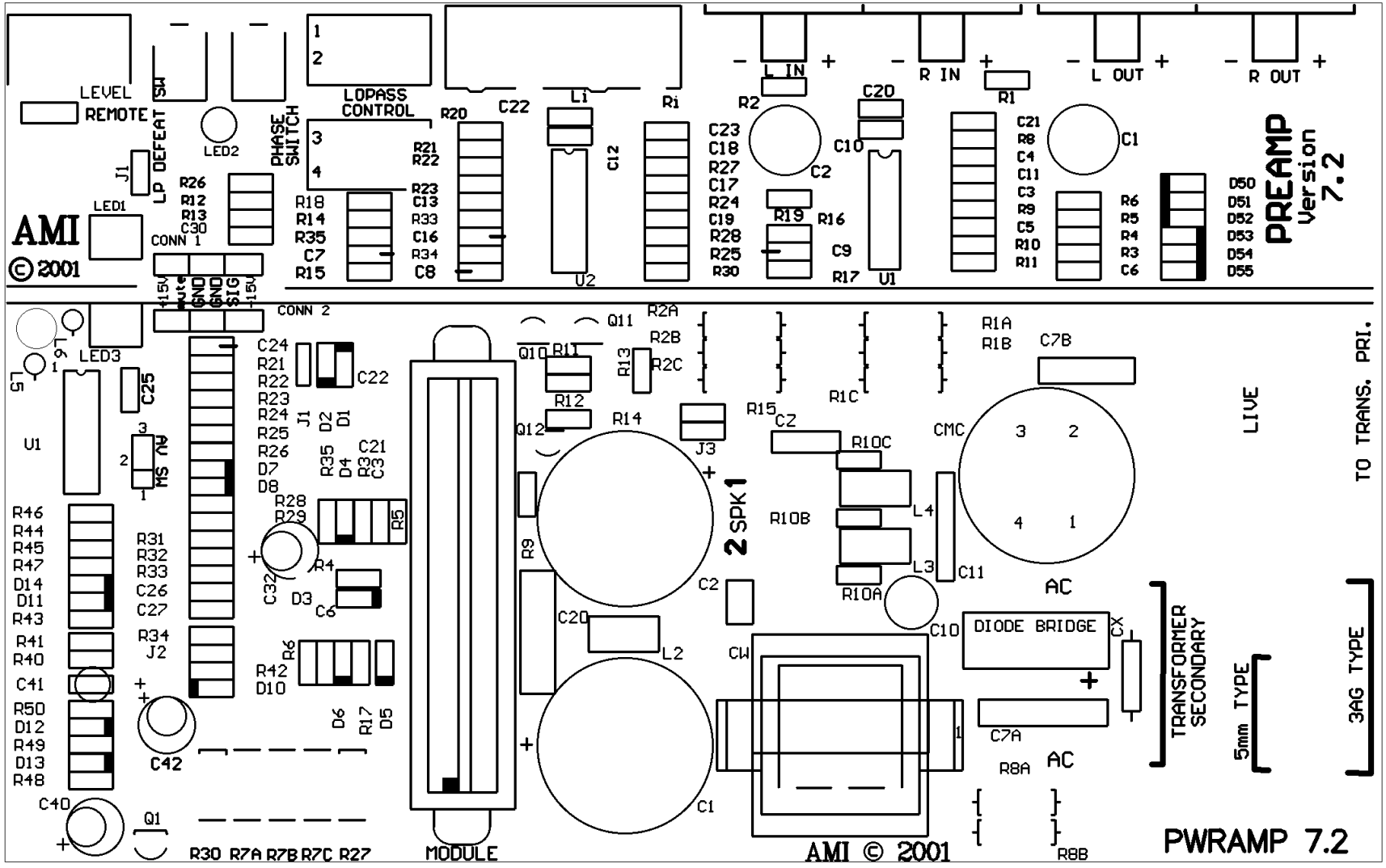


COMP SIDE

FANCY Version 7.2

.125 holes NOT thru-plated

PB12 (PCB version 7.2) (Revision 1 Only)

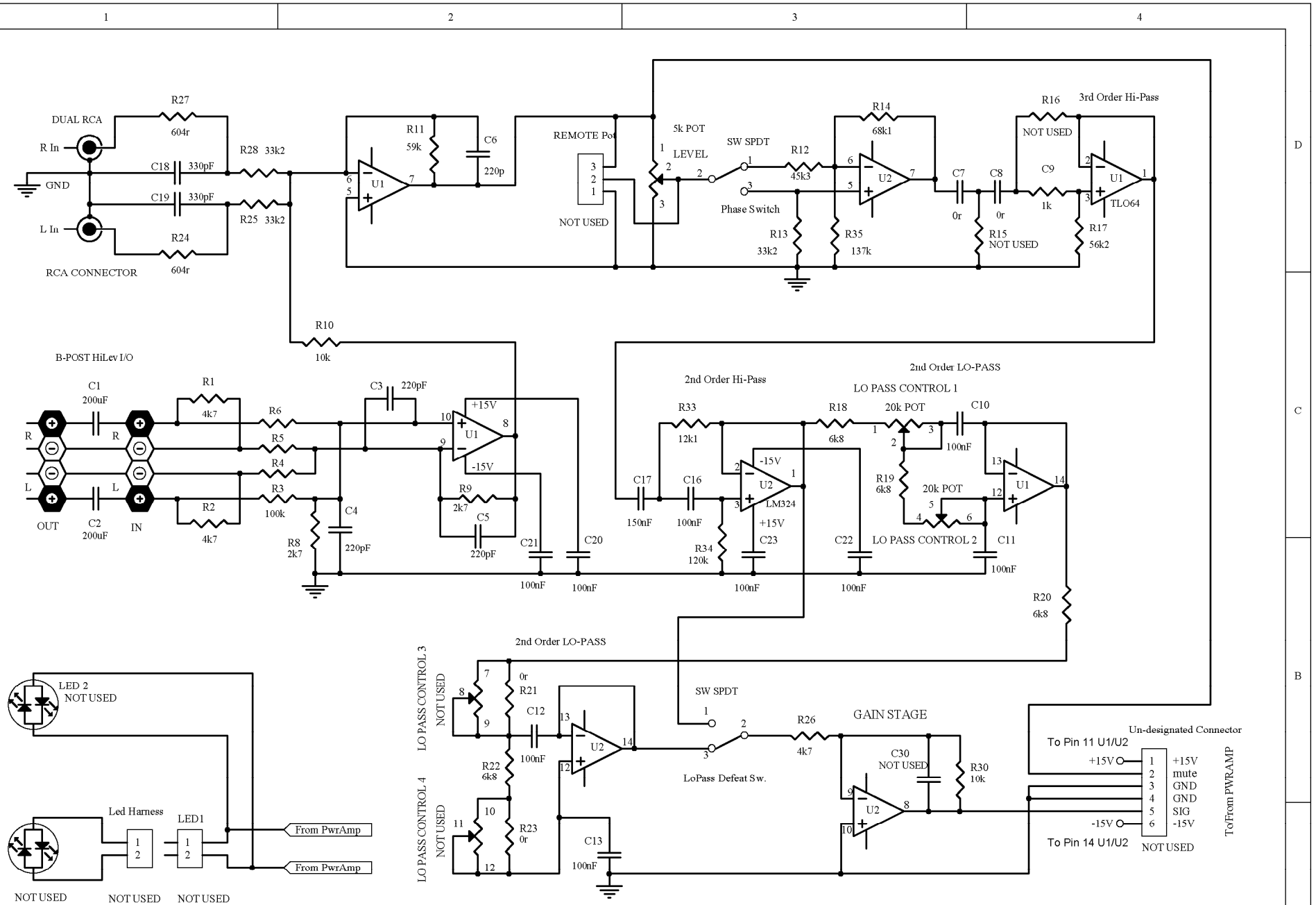


SILKSCREEN

FANCY Version 7.2

.125 holes NOT thru-plated

PB12 Revision 1 Schematic Diagrams PREAMP (PCB version 6.3)



Title	B12 PREAMP (6.3 pcb)	
Size: Tabloid	Number	Revision: 5
Date: 20-Apr-2000		Sheet1 of 1
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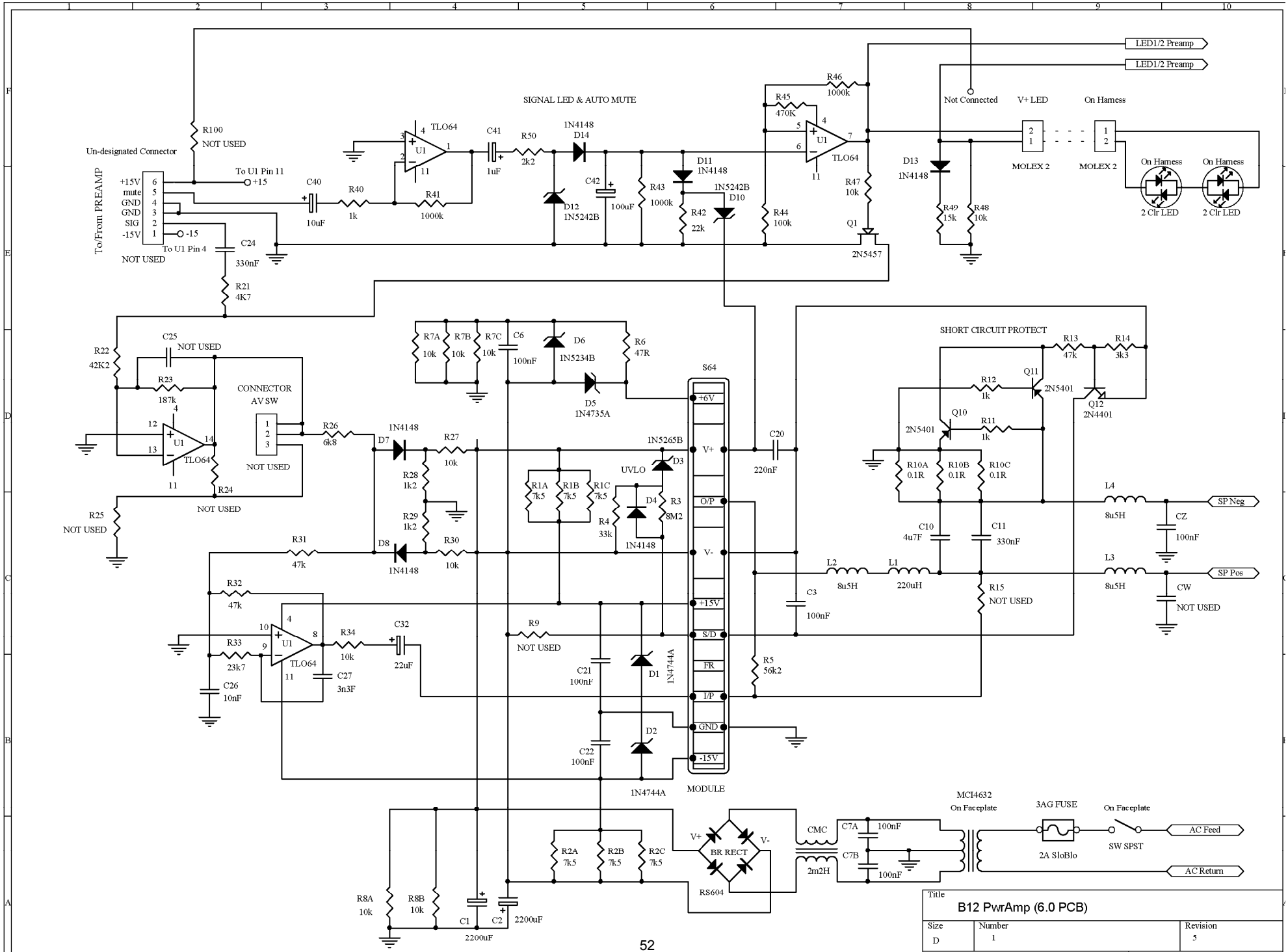
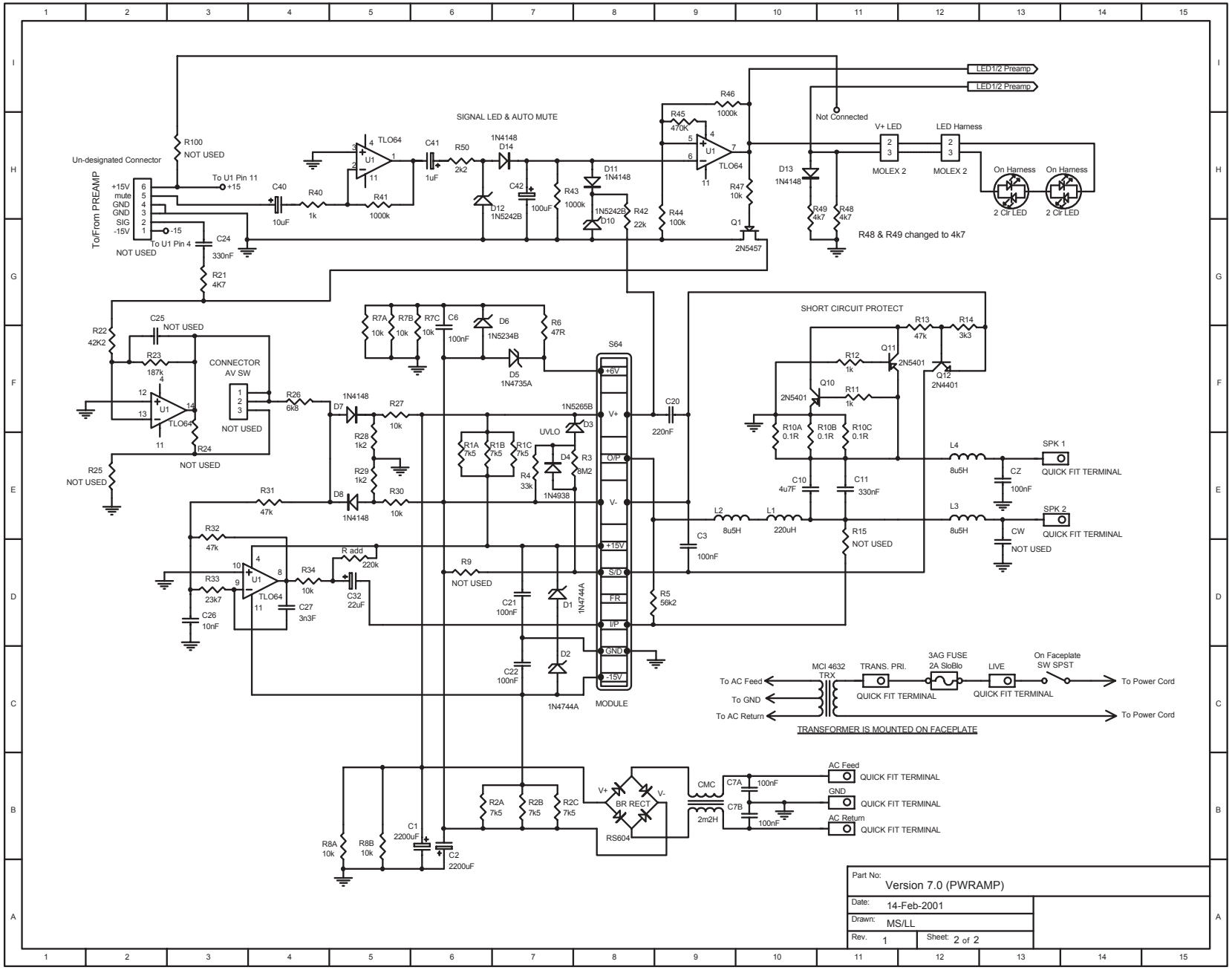
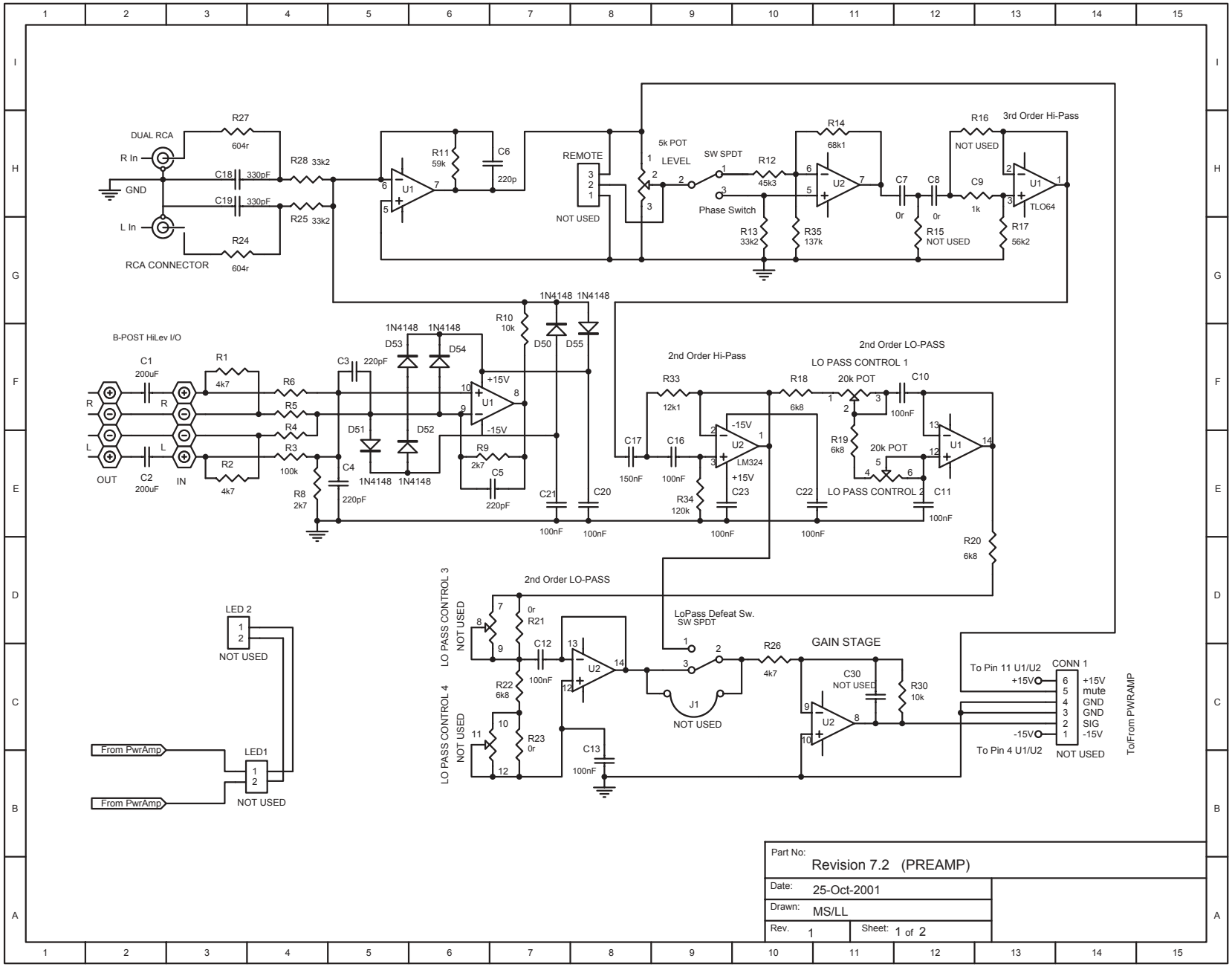
PB12 Revision 1 Schematic Diagrams

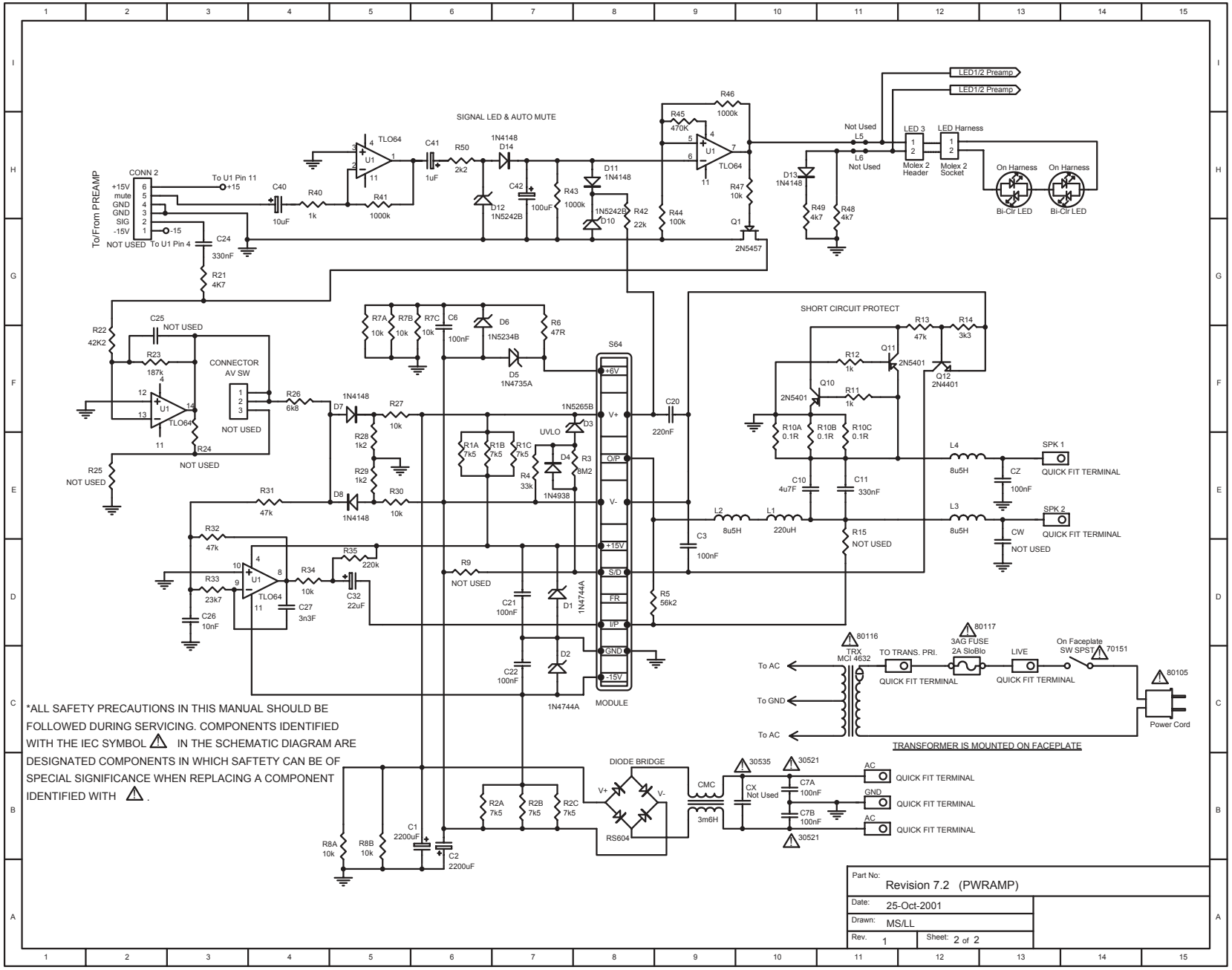
(Power Amp PCB version 6.0 - 6.3)

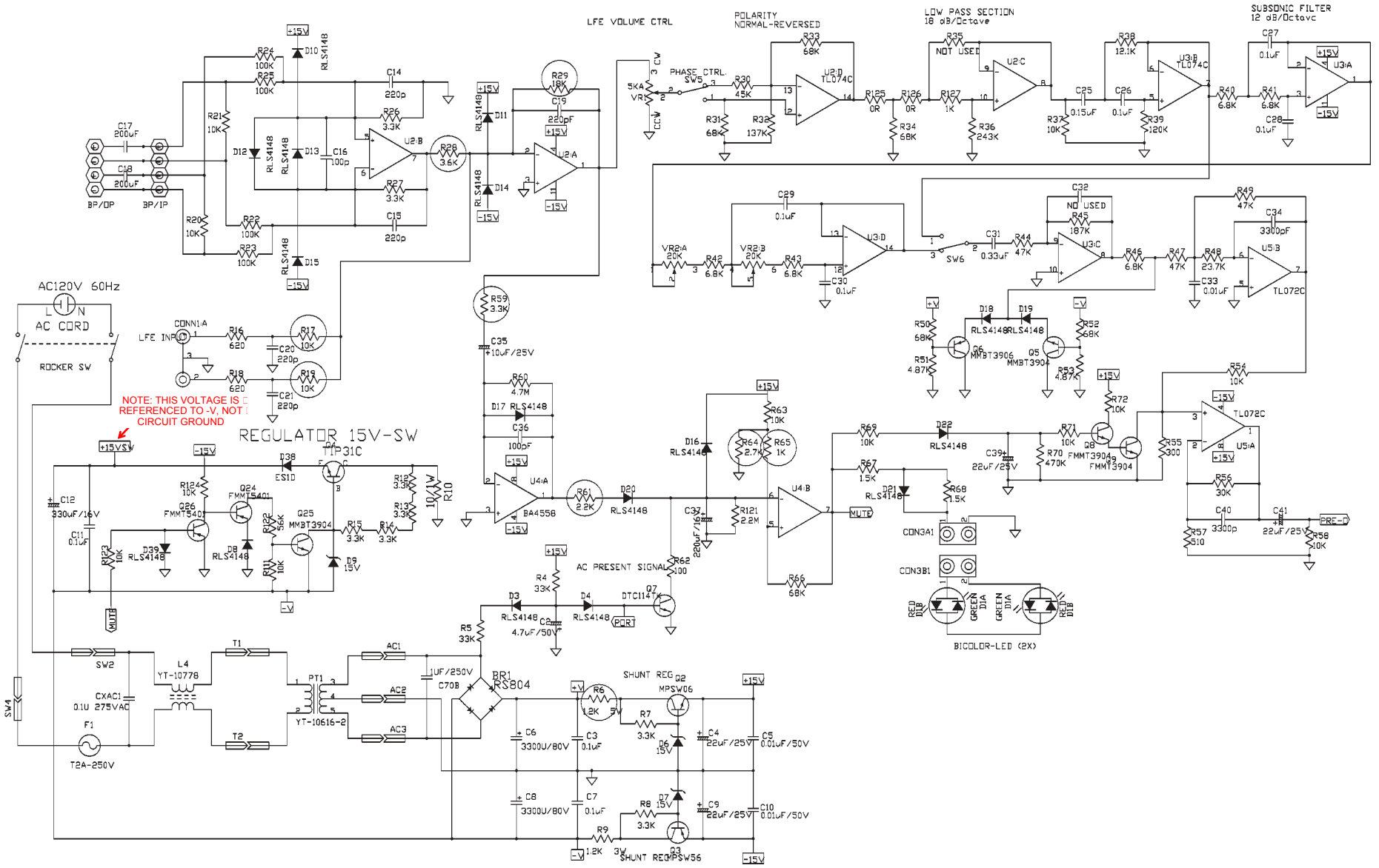


Title	B12 PwrAmp (6.0 PCB)	
Size: D	Number: 1	Revision: 5
Date: 20-Apr-2000	Sheet 1of 1	
File: T:\PB12 sch Folder\..\PB12 PwrAmp Rev5.sch	Drawn By: MA / LL	

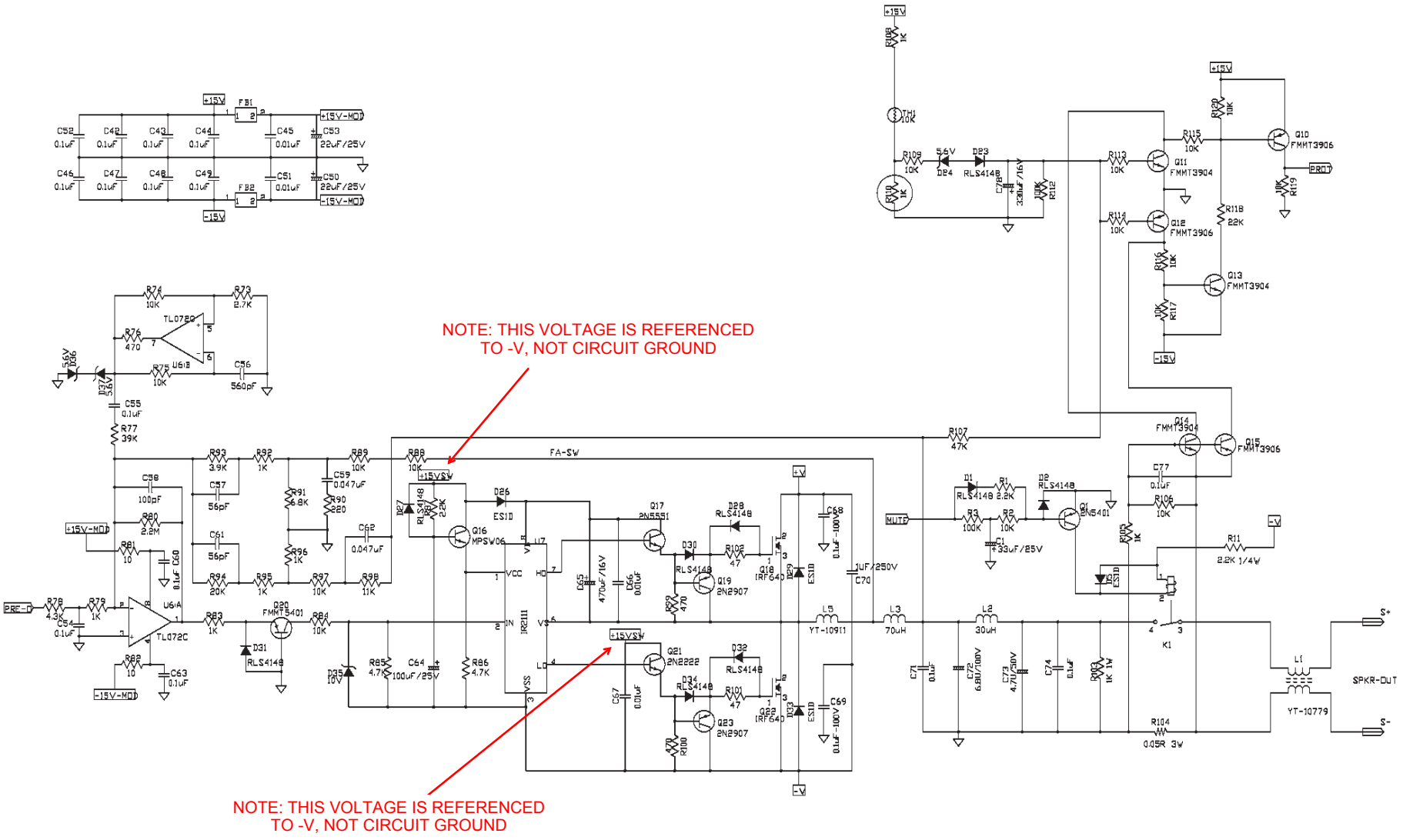

SIGNAL LED & AUTO MUTE
SHORT CIRCUIT PROTECT
LED1/2 Preamp
LED1/2 Preamp
Not Connected
V+ LED
LED Harness
MOLEX 2
MOLEX 2
On Harness
On Harness
2 Clr LED
2 Clr LED
R48 & R49 changed to 4k7
Un-designated Connector
To/From PREAMP
+15V
mute
GND
GND
SIG
-15V
To U1 Pin 11
To U1 Pin 4
NOT USED
CONNECTOR AV SW
S64
+6V
V+
O/P
V-
+15V
S/D
FR
I/P
GND
-15V
MODULE
UVLO
R add
TRANSFORMER IS MOUNTED ON FACEPLATE
MCI 4632 TRX
TRANS. PRI.
3AG FUSE 2A SloBlo
LIVE
On Faceplate SW SPST
To AC Feed
To GND
To AC Return
To Power Cord
To Power Cord
QUICK FIT TERMINAL
SPK 1
SPK 2
AC Feed
GND
AC Return
BR RECT
RS604
Part No: Version 7.0 (PWRAMP)
Date: 14-Feb-2001
Drawn: MS/LL
Rev. 1
Sheet: 2 of 2


DUAL RCA
R In
GND
L In
RCA CONNECTOR
R27
604r
C18 330pF
C19 330pF
R28 33k2
R25 33k2
R24
604r
R11
59k
C6
220p
U1
REMOTE
NOT USED
5k POT
LEVEL
SW SPDT
Phase Switch
R12
45k3
R14
68k1
R16
NOT USED
3rd Order Hi-Pass
U2
TLO64
C7
C8
C9
1k
0r
R13
33k2
R35
137k
R15
NOT USED
R17
56k2
B-POST HiLev I/O
C1
200uF
R1
4k7
R6
R5
R4
R3
100k
R2
4k7
C2
200uF
OUT
IN
C3
220pF
C4
220pF
R8
2k7
D51
D52
D53
D54
1N4148
R10
10k
D50
D55
+15V
-15V
R9
2k7
C5
220pF
2nd Order Hi-Pass
2nd Order LO-PASS
LO PASS CONTROL 1
R33
12k1
R18
6k8
20k POT
C10
100nF
R19
6k8
20k POT
C17
150nF
C16
100nF
LM324
C23
C22
LO PASS CONTROL 2
C11
R34
120k
C21
C20
R20
6k8
LED 2
NOT USED
From PwrAmp
LED1
From PwrAmp
NOT USED
2nd Order LO-PASS
LO PASS CONTROL 3
NOT USED
LO PASS CONTROL 4
NOT USED
R21
0r
C12
100nF
R22
6k8
R23
0r
C13
100nF
LoPass Defeat Sw.
SW SPDT
J1
NOT USED
R26
4k7
GAIN STAGE
C30
NOT USED
R30
10k
To Pin 11 U1/U2
+15V
-15V
To Pin 4 U1/U2
CONN 1
+15V
mute
GND
GND
SIG
-15V
NOT USED
To/From PWRAMP
Part No:
Revision 7.2 (PREAMP)
Date:
25-Oct-2001
Drawn:
MS/LL
Rev.
1
Sheet:
1 of 2


SIGNAL LED & AUTO MUTE
SHORT CIRCUIT PROTECT
CONN 2
To/From PREAMP
+15V
mute
GND
GND
SIG
-15V
NOT USED
To U1 Pin 11
To U1 Pin 4
TLO64
U1
LED1/2 Preamp
LED1/2 Preamp
LED 3
LED Harness
Molex 2 Header
Molex 2 Socket
On Harness
Bi-Clr LED
Not Used
CONNECTOR AV SW
S64
+6V
V+
O/P
V-
+15V
S/D
FR
I/P
GND
-15V
MODULE
UVLO
DIODE BRIDGE
RS604
CMC
3m6H
CX
Not Used
TRX
MCI 4632
TO TRANS. PRI.
3AG FUSE
2A SloBlo
LIVE
On Faceplate
SW SPST
QUICK FIT TERMINAL
To AC
To GND
To AC
Power Cord
TRANSFORMER IS MOUNTED ON FACEPLATE
SPK 1
SPK 2
CW
CZ
NOT USED
*ALL SAFETY PRECAUTIONS IN THIS MANUAL SHOULD BE FOLLOWED DURING SERVICING. COMPONENTS IDENTIFIED WITH THE IEC SYMBOL ⚠ IN THE SCHEMATIC DIAGRAM ARE DESIGNATED COMPONENTS IN WHICH SAFTETY CAN BE OF SPECIAL SIGNIFICANCE WHEN REPLACING A COMPONENT IDENTIFIED WITH ⚠.
Part No: Revision 7.2 (PWRAMP)
Date: 25-Oct-2001
Drawn: MS/LL
Rev. 1
Sheet: 2 of 2


LFE VOLUME CTRL
POLARITY
NORMAL-REVERSED
LOW PASS SECTION
18 dB/Octave
SUBSONIC FILTER
12 dB/Octave
PHASE CTRL.
SW5
NOT USED
AC120V 60Hz
AC CORD
ROCKER SW
CONN1:A
LFE INPUT
NOTE: THIS VOLTAGE IS
REFERENCED TO -V, NOT
CIRCUIT GROUND
REGULATOR 15V-SW
TIP31C
AC PRESENT SIGNAL
SHUNT REG
MPSW06
BR1
KBS804
BA4558
TL072C
MMBT3906
MMBT3904
FMMT5401
FMMT540
DTC114T
BICOLOR-LED (2X)
RED DIA
GREEN DIA
T2A-250V
YT-10778
YT-10616-2
SW2
SW4
SW6
MUTE
PCR1

PRE-AMP


NOTE: THIS VOLTAGE IS REFERENCED TO -V, NOT CIRCUIT GROUND
NOTE: THIS VOLTAGE IS REFERENCED TO -V, NOT CIRCUIT GROUND
FA-SW
MUTE
SPKR-OUT
POWER-AMP